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## 1. ILS PERFORMANCE SPECIFICATIONS

### 1.1 JILSP Purpose/Organization.

This document establishes the Joint Integrated Logistics Support Plan (JILSP) that will be used by the government and the TCS contractor to develop and deploy support for the Tactical Control System (TCS). This plan describes the interrelationships and responsibilities for planning, management, and execution of the TCS ILS program by the government and the TCS contractor. It is not to be interpreted as a redefinition of ILS contractual requirements. *During Phase I of the TCS development program operations and maintenance of the TCS will be a government responsibility shared between Naval Surface Warfare Center, Dahlgren Division (NSWC-DD) and the Joint Test Center/Systems Integration Laboratory (JTC/SIL) at Redstone Arsenal, Alabama.* During the Phase I (Program Definition and Risk Reduction) three fieldable TCS prototypes (one ship based, two land based) will be developed over a 24 month period .

This JILSP is the primary plan and guide for management of the TCS ILS program. It comprises the logistic management plan for the current life-cycle phase as well as the logistic acquisition plan for the next program phase. It describes logistic requirements and constraints as well as the status of the supportability effort.

The logistics analysis process shall be accomplished IAW MIL-STD-1388-1 tailored to fit program requirements. The resulting data, when applicable, shall be recorded in the Logistics Support Analysis Record (LSAR IAW MIL-STD-1388-2). The LSA program shall be the single analytical effort to evaluate design alternatives, to determine the most cost efficient methods of providing logistics support, and to acquire data required to provide integrated logistics support. Operator, unit maintainer, and intermediate maintenance tasks identified in the LSA/LSAR process shall be addressed in the training documentation. Logistics specifications are further defined in the ILS statement of work.

Support for the TCS shall be in accordance with the Joint Integrated Logistics Support Plan (JILSP) and the maintenance concepts and policies of the individual Services. Each Service shall support the TCS as part of the UAV system which is organic to them.

### 1.2 Acquisition Reform

Acquisition Reform has emphasized the areas of advanced technology insertion, best commercial practices, and cost reduction. The total cost (or savings in cost) to the TCS program, in the spirit of acquisition reform, will be determined by how much these areas are addressed in the execution of the TCS program. Total cost of ownership includes the development , procurement and supportability cost. Supportability cost, in order to be minimized, must be identified up front in the definition of the TCS program objectives.

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Once known, these costs should weigh heavily in subsequent program decisions. Therefore, supportability metrics must be developed to verify these constraints.

The maintenance concept will drive the support philosophy for the life of the TCS program and will establish the parameters that influence “how” the services will support the TCS when the system becomes operational.

## 1.2.1 Standardization - Key to acquisition reform

Standardization is not just utilizing common or like things, but it is a way of doing business for the TCS program (see Section 17 for details). This way of doing business will be paramount to successful fielding of future systems. DoD Instruction 5000 series of June 1994 states that “Specifications and Standards will be performance based to the maximum extent possible and established an order of precedence for the use of Specifications and Standards. This step was the first step in the standardization process from a technical perspective. The Integrated Product Team (IPT) and Integrated Product/Process Development Initiative was another.

Standardization initiatives were also started in the operational requirements areas and joint issues areas.

*The allocation of resources throughout a typical Program are roughly 10% R&D, 30% Production and 60% Operations & Support. TCS program initiation should focus on the true life-cycle cost of the TCS system.*

The major drives in the Operation and Support cost are those that drive supportability issues. Trade-off between limited resources and support constraints must be put on the table early. TCS program risk assessment should consider (but not be limited to) the following logistics factors:

- Total projected life
- Level of repair
- Maintenance schedules
- Contractor vs. organic support
- COTS/NDI market surveys and scrutiny of proposed warranties
- Services infrastructure and ability to accommodate prescribed support performance threshold levels from Operational Requirements Documents (ORD) / Acquisition Program Baseline (APB)

The acquisition logistics representatives should advocate for:

- Support performance from ORD/APB
- Life Cycle Cost (LCC) studies
- Risk assessment
- Optimizing COTS/NDI decision using market survey risk mitigation

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## 1.3. Tactical Control System

The TCS is a software intensive program to provide the warfighter with a scaleable and modular capability to operate UAVs on existing computer systems and interface for dissemination with current and future C4I processing systems. Scaleable refers to the capability to provide the five levels of UAV interaction. Modularity allows the use of common hardware and the ability to increase or decrease capability by adding or removing cards, chips, etc., from the system being used.

The Tactical Control System (TCS) program is depicted in Figure 1-1. And includes the software, software-related hardware and the extra ground support hardware (antenna, cabling, etc.) necessary for the control of the Tactical Unmanned Aerial Vehicle (TUAV), the Medium Altitude Endurance (MAE) UAV, and future tactical UAVs.

- The TCS will also provide connectivity to identified Command, Control, Communications, Computers, and Intelligence (C4I) systems.
- The TCS will have the objective capability of receiving High Altitude Endurance (HAE) UAV payload information.
- Although developed as a total package, the TCS can be configured and tailored to meet the user's deployment or operational requirements.

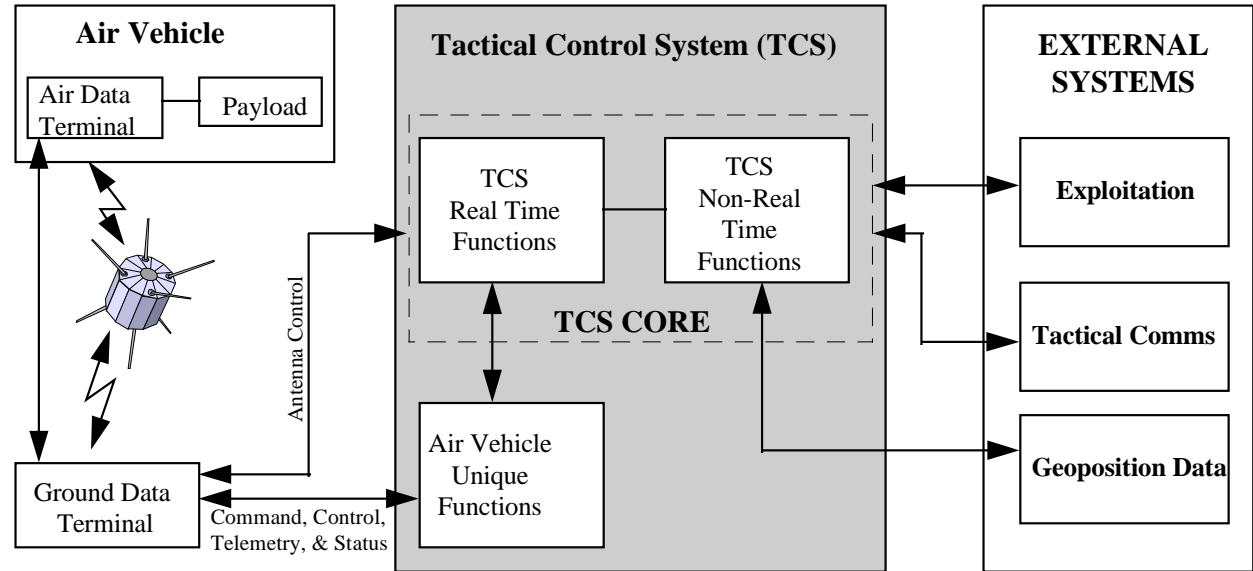
### 1.3.1 Software

*The major focus of the TCS program is software. The software will provide the UAV operator the necessary tools for computer related communications, mission tasking, mission planning, mission execution, data receipt, data processing, limited data exploitation and data dissemination.*



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## Airborne Reconnaissance/C4I Connection



**Figure 1-1. Tactical Control System (TCS) Block Diagram**

*The TCS software will provide a high resolution, computer generated, graphics user interface that enables a UAV operator that is trained on one system to control different types of UAVs or UAV payloads with minimal additional training.*

- The TCS will be in an open architecture and be capable of being hosted on computers that are typically supported by the using Service.
- *The software developed will be Defense Information Infrastructure/Common Operating Environment (DII-COE) compliant, non-proprietary, and the architectural standard for all future UAVs.*
- *Additionally, this TCS software shall become the architectural standard for all future tactical UAVs. To the extent possible the TCS will use standard DoD software components to achieve commonality. TCS will provide software portability, scaleable functionality, and support for operational configurations tailored to the user's needs.*

*The five discrete levels of multiple UAV interaction to be provided by the TCS are:*

*Level 1 - receipt and transmission of secondary payload imagery and/or data;*

*Level 2 - direct receipt of payload data/imagery;*

*Level 3 - UAV payload control and direct receipt of payload data/imagery;*

*Level 4 - control of the UAV, less launch and recovery, in addition to all functionality of Levels 1 through 3; and*

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*Level 5 - full functionality and control of the UAV from launch to recovery.*

*Phase 1 will be a 24 month period and will demonstrate Level 1 through Level 5 interaction in an incremental and evolutionary strategy in accordance with MIL-STD-498.*

## **1.3.2 Hardware.**

*To the extent possible, the TCS will use standard Department of Defense (DoD) components in order to achieve commonality and support the concepts of modularity, scalability and future growth.*

- The TCS will use the computing hardware specified by the service specific procurement contracts.*

- The individual armed services will identify TCS computing hardware, the desired level of TCS functionality, the battlefield C4I connectivity, and the particular type of air vehicle and payloads to be operated depending upon the deployment concept and area of operations.*

- TCS hardware must be capable of being scaled or modularized to meet varying Service needs.*

*TCS software will run on current services' hardware such as TAC-X (Navy), CHS-II/SPARC 20 (Army / Marines) and SGI/DEC (Air Force).*

*For the U. S. Army and the U. S. Marine Corps, the TCS will be an integral part of the Outrider (TUAV), two HMMWV-based ground control stations (GCSs). The Army will obtain TCSs in addition to those required for the TUAV program to receive/control (Predator) MAE UAV information.*

*For the U. S. Navy, the TCS will initially support the Outrider, (TUAV) and receive Predator (MAE) payload data aboard L-Class ships. The TCS will be the control system for future ship-based UAVs and UAV operations. Since ships already provide the necessary infrastructure to support a computer based system (electrical power, environmental control, radio networks, etc.), the TCS is virtually the GCS for the Navy.*

*For the U. S. Air Force, the TCS will be an upgrade of the existing GCSs for the Predator (MAE) UAV.*

*The hardware of the TCS must be capable of being scaled or being modular to meet the varying needs of the Services. The TCS hardware will allow for long range communications from one TCS to another, data storage expansion, access to other computers to share in processing capability, and multiple external peripherals. Figure 1-1 provides a functional overview of the TCS system.*

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## 1.3.3 Integration with Joint C4I Systems

*TCS supports direct connectivity to standard DoD tactical (VHF, UHF, and HF) radios, Mobile Subscriber Equipment (MSE), and military and commercial satellite communications. TCS integration with C4I systems will be accomplished through development of interfaces that permit information exchange between the TCS and specified C4I systems. TCS will be capable of entering DII/COE compliant networks. Network interoperability will include but not be limited to :*

- *Advanced Tactical Weapons Control Station (ATWCS)*
- *Advanced Field Artillery Tactical Data System (AFTADS)*
- *Air Force Mission Support System (AFMSS)*
- *All Source Analysis System (ASAS)*
- *Automated Deep Operations Coordination System (ADOCS)*
- *Automated Target Hand-off System (ATHS)*
- *Closed Circuit Television (CCTV)*
- *Common Operational Modeling, Planning, and Simulation System (COMPSS)*
- *Contingency Airborne Reconnaissance System (CARS)*
- *Enhanced Tactical Radar Correlator (ETRAC)*
- *Guardrail Common Sensor (GRCS)/Aerial Common Sensor (ACS) Integrated Processing Facility (IPT)*
- *Intelligence Analysis System (IAS)*
- *Joint Deployable Intelligence Support System (JDISS)*
- *Joint Maritime Command Information System (JMCIS)*
- *Joint Service Imagery Processing System - Navy (JSIPS-N)*
- *Joint Standoff Target Attack Radar System (JSTARS) Ground Station Module/Common Ground Station (GSM/CGS)*
- *Modernized Imagery Exploitation System (MIES)*
- *Precision Targeting Workstation (PTW)*
- *Tactical Aircraft Mission Planning System (TAMPS)*
- *JSIPS Tactical Exploitation Group (TEG)*
- *Theater Battle Management Core System (TBMCS)*
- *TROJAN Special Purpose Integrated Remote Intelligence Terminal (SPIRIT) II*

*The TCS will export and disseminate UAV imagery products, tactical communication messages, as well as mission plans and target coordinates. TCS will also receive, process, and display tasking orders and operational information from service specific mission planning systems.*

## 1.3.4 System Compliance

*The TCS will be developed in compliance with the following military and commercial computing systems architecture, communications processing, and imagery architecture standards:*

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- a) *Assistant Secretary of Defense (ASD) (C3I) Joint Technical Architecture (JTA)*
- b) *Airborne Reconnaissance Information Technical Architecture (ARITA)*
- c) *Defense Information Infrastructure (DII) Common Operating Environment (COE)*
- d) *Common Open Systems Interface Processor (COSIP)*
- e) *Common Imagery Ground/Surface System (CIGSS) Handbook*
- f) *Joint Interoperability interfaces*
- g) *National Imagery Transmission Format (NITF)*
- h) *Variable Message Format (VMF) and Joint Message Format (JMF)*

## 1.3.5 ACAT Status.

This program was designated Acquisition Category II (ACAT II) on 12 September 1997, based on the guidelines established in DoD Instruction 5000.2.

An overview of the TCS schedule is illustrated in figure 1-2.

## 1.4 Operational Concept.

The TCS will provide the common software architecture between Pioneer, MAE UAV, TUAV, and future tactical UAVs. Accordingly, the operational concept for the TCS will be the same as for the host UAV system it supports.

### 1.4.1 TCS Utilization

*The TCS shall be capable of operating continuously in the Operation Mode for a minimum of 72 hours.*

Basis is 30 days/month x 24 hours/day=720 hours/month, during stable operations. Projected utilization per TCS:

- Peacetime .....100 hours/month
- 90 day surge (wartime). ....200 hours/month

### 1.4.2 TCS Performance.

*Operational availability (installed) of TCS is required to equal the  $A_o$  of the host UAV system.  $A_o$  is defined as follows:*

$$A_o = (OT + ST)/(OT + ST + TPM + TCS + TALDT)$$

where: *OT denotes Operate Time*

*ST denotes Standby Time*

*TPM denotes Total Preventative Maintenance*

*TCM denotes Total Administrative and Logistics Downtime*

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*The threshold Ao for the TCS shall be greater than or equal to 90% in order to maintain a continuous 24 hour presence, with an objective Ao of 95%. Source: TCS SSDD*

*The TPM on a non interference basis shall not exceed 1 hour per day. Preventative Maintenance (PM) on an interference basis shall be acceptable, but shall not exceed one hour per week.*

*The TCS shall achieve a threshold system reliability (Mean Time Between Failures (MTBF)) equal to or greater than 2000 hours, with an objective system reliability of 3000 hours.*

*The TCS maintainability will be considered in every phase of the design and development process. The TCS threshold maintainability (Mean Time To Repair (MTTR)) shall be equal to or less than 1.9 hours, with an objective maintainability equal or less than 1 hour.*

MAE UAV requirement:

- Peacetime ..... 90%
- 90 day surge (wartime). .... 95%

TUAV requirement:

- Peacetime ..... 85%
- 90 day surge (wartime). .... 85%

## 1.5 Support Concept.

TCS will be supported completely by the contractor during reliability and maintainability demonstrations conducted during Developmental Testing (DT). No operational evaluation (OPEVAL) is anticipated for TCS as a stand alone system.

- An OPEVAL will be conducted on each of the acquired UAV systems with TCS included as an integral part of that particular system.
- During these OPEVALs it is anticipated that Navy, Air Force, Army, and Marine Corps personnel will operate and maintain TCS , with contractor support, as part of the larger UAV system.
- Logistic support will begin a transition from contractor to government support when the first production article is delivered.
- Complete government organizational (O) level support capability will be established by the host UAV initial operational capability (IOC) date. IOC date is scheduled 1 March 2000.
- Complete government intermediate (I) level capability will be established by material support date (MSD).

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- Complete government depot (D) level will be established by government support date (GSD). After completion of the transition, logistic support will be totally government organic, the baseline logistic support concept.
- When this occurs, government organizational, intermediate, and depot level maintenance will be established in accordance with each user service's maintenance program (i.e., 3M/NAMP, CAMS/REMIS or TAMMS)
- Each Service shall support the TCS as part of the UAV system which is organic to them.
- The TCS shall be maintained in accordance with the UAV ORD and approved maintenance concepts and procedures for that Service and the Level of Repair Analysis (LORA) for the hardware chosen.

## 1.6 Maintenance Concept.

*In the Maintenance Operations Mode the TCS Core Functionality CSCI shall support the following functions:*

1. *Conduct Air Vehicle (AV) maintenance*
2. *Conduct payload maintenance*
3. *Conduct Data Link Terminal maintenance*
4. *Conduct workstation and peripheral equipment maintenance*
5. *Perform Fault Detection/Location (FD/L)*
6. *Perform Software Upgrades*
7. *Perform Software Debug and Monitoring*

*TCS will be maintained with an organizational, intermediate, and depot level program (O to I to D) as follows:*

- TCS will be maintained completely by the contractor during reliability and maintainability demonstrations conducted during DT.
- During host UAV OPEVAL it is anticipated that Navy, Air Force, Army, and Marine Corps personnel will operate and maintain TCS, with contractor assistance, as part of the larger host UAV system.
- Contractor assistance will include D level maintenance. Contractor O level maintenance support will end at IOC. Contractor I level maintenance support will end at MSD. Contractor D level maintenance support will end at GSD.

*The following TCS requirements are allocated to the Maintenance element of the TCS Core Functionality CSCI:*

- *Periodic and Extensive Fault Detection/Location processing*
- *Maintenance Processing*
- *Contribution to Logistic Databases*
- *Interactive Electronic Technical Manuals*

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- *Software Debug and Monitoring processing*
- *HCI requirements*

## 1.6.1 Fault Detection/Location (FD/L)

*The TCS Core Functionality CSCI shall perform periodic Fault Detection/Location (FD/L) on the TCS Computer hardware configuration items (CSCI) while in the Normal Operations Mode and Training Mode.*

*The TCS Core Functionality CSCI shall periodically provide Fault Detection/Location (FD/L) status to TCS Main element of the TCS Core Functionality CSCI, while in the Normal Operations Mode and Training Mode, to determine the level of interaction operational by the available HWCIs.*

*The TCS Core Functionality CSCI shall be capable of executing each of the following software packages and displaying the appropriate results:*

- *AV specific maintenance;*
- *each of the payload specific maintenance;*
- *each specific data link terminal*

*The TCS Core Functionality CSCI shall provide processing capability to exercise FD/L periodically during Normal Operations and Training Modes, and extensively, if selected, as part of Maintenance Mode.*

*The TCS Core Functionality CSCI shall provide the operator the ability to control and monitor the Fault Detection/Location for the Air Vehicle(s), Payload(s), and Data Links.*

*Periodic operation of the FD/L processing shall fault detect TBD% of all mission critical failures with a false alarm rate not to exceed TBD%.*

*The TCS shall isolate TBD% of all detected mission critical failures to a single LRU.*

*The remaining mission critical failures detected but not isolated by periodic FD/L shall be isolated using manual isolation procedures and technical data provided to the operator by the TCS Core Functionality CSCI.*

*Periodic      FD/L - Mission Critical Failures      -      % Fault Detection*

- *Fault Isolate single LRU % (Mission Critical)*
- *Mission Critical Failures      -      Manual Isolation Procedures*
- *Non-mission critical Failures -      % Fault Detection*

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*Periodic FD/L –Fault Isolate single LRU % (Mission Critical)*

*Periodic FD/L - Mission Critical Failures - Manual Isolation Procedures*

*Periodic FD/L -- Non-mission critical Failures - % Fault Detection*

*Extensive FD/L - Mission Critical Failures - % Fault Detection*

*- Non-mission Critical Failures - % Fault Detection*

*Extensive FD/L processing provided by the TCS Core Functionality CSCI shall allow the operator(s) to select specific tests or all test for execution.*

*Extensive FD/L processing shall inform the operator(s) how long a specific test will take and periodically, at least once every TBD seconds, delineate the estimated time till completion.*

*The TCS Core Functionality CSCI shall allow Authorized Operators to perform the following functions:*

- Install software upgrades via CD-ROM or other media storage devices.*
- Modify all TCS software programmable parameters.*
- execute a software debug capability and view the resulting debug diagnostic information.*

*Note these functions will be strictly controlled via password protection.*

## **1.7 Support Dates.**

The material support date (MSD) is the date on which the government Program Support Inventory Control Point (PSICP) assumes responsibility for all spares and repair parts for the TCS at field operational sites.

- MSD is scheduled to be achieved on 1 July 2000.

The Government support date (GSD) is the date on which the Government assumes complete support responsibility for TCS, including government depot capability.

- GSD is scheduled to be achieved on 1 July 2000.

Note, these are planned dates, subject to change.



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## **1.8 ILS Performance Requirements Summary.**

The TCS logistic support system will be designed by the contractor and the government to achieve the following ILS performance requirements that will be demonstrated during supportability test and evaluation (T&E) in accordance with DoD 5000.3-M-4 Joint Test and Evaluation Procedures Manual.

### **1.8.1 Support System Capability Development**

During Engineering and Manufacturing Development (E&MD) support system capability development efforts will be concentrated on identifying maintenance requirements and related logistic resources, and on acquiring and integrating all logistic support elements. E&MD efforts include:

- assessment of TCS capabilities,
- verification of reliability and maintainability projections,
- implementation of logistic support system innovations, and
- demonstration and assessment of all logistic elements and TCS supportability characteristics.

### **1.8.2 Support System Capability at IOC.**

A completely self-sustaining organic (government) O level support capability will be fielded in time to meet the IOC date.

- This capability will include the necessary production configured SE, validated and verified production technical manuals, training equipment/trainers, trained personnel, spares and repair parts, required facilities, and other support resources that are necessary to sustain O level operations.
- The scope of I and D level organic support capability will be consistent with system design maturity and will maximize the use of the existing support infrastructure, including already fielded common SE.

### **1.8.3 Support System Capability at MSD.**

A completely self-sustaining, organic O and I level maintenance and supply system capable of supporting TCS field operations in a deployed status will be fielded prior to MSD.

This includes operational and training units in all scenarios identified in the Joint Requirements Oversight Committee (JROC) Memorandums, JROCM 159-96 (TCS Key Performance Parameters) dated 6 November 1996 and JROCM 173-96 (UAV Requirements and Priorities) dated 11 December 1996.

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Organic maintenance capability will be developed to the extent necessary to support these operations at the O and I levels of maintenance. At this point, the incremental phase-in of organic I level capability will be completed.

## **1.8.4 Support System Capability at GSD.**

A completely self-sustaining, organic O, I, and D level support system will be fielded and operational prior to GSD. This capability will include government supply support, maintenance, training, facilities, support equipment/trainers, and technical manuals for TCS.

## **1.8.5 Support System Capability During Stable Operations.**

The support system during stable operations is usually completely organic and three level (O, I, and D), capable of supporting the full range of TCS operational requirements, while meeting specified performance parameters. Maintenance will be performed in accordance with each user service's maintenance program (i.e., 3M/NAMP, CAMS/REMIS or TAMMS). Limited non-organic support may be provided by the contractor on a case-by-case basis only as approved by the government.

## **1.8.6 Logistic Support Basis.**

Logistic support requirements will be developed through the logistic support analysis (LSA) process, and all logistic resources are to be planned on the basis of operational mean time between mission critical failures (MTBMCF) and mean time to repair (MTTR) as opposed to inherent or laboratory values.

## **1.8.7 Supportability T&E.**

TCS will be tested to ILS performance specifications during supportability test and evaluation (T&E). Supportability T&E to be conducted includes contractor and government testing. Government testing includes 1.8 Schedules:

Phase I: Program Definition and Risk Reduction (Sept. 96 - Sept. 98). Demonstration of TCS prototypes will occur in this phase. At the end of the demonstration phase, the Milestone Decision Authority (MDA) must decide whether or not to approve Milestone II, and begin Phase II.

Phase II: Engineering/Manufacturing and Development (Oct. 98 - Oct. 00). The design and engineering of TCS relies almost exclusively on Off the Shelf (OTS) hardware, and the use of a Common Operating Environment (COE) with proven software modules; therefore; the fieldable TCS prototypes are expected to have the design stability normally expected of systems which have been engineered in an engineering and manufacturing development process. Thus an opportunity exists to streamline the acquisition process by initiating Limited Rate Initial Production (LRIP) immediately upon approval of Milestone II, without additional engineering approval to begin Phase II (including LRIP and IOT & E) would also trigger the issuing of a Request for Proposal (RFP) for full scale production.

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Phase III: Production, Fielding/Deployment, and Operational Support (Sept. 2000 - Sept. 2004). Phase III production begins with a Milestone III decision, based on the successful outcome of IOT & E and a Beyond LRIP Report. Full scale production and fielding, along with the implementation of the integrated logistics support plan, would be accomplished in Phase III.

## **1.9 TCS Schedules.**

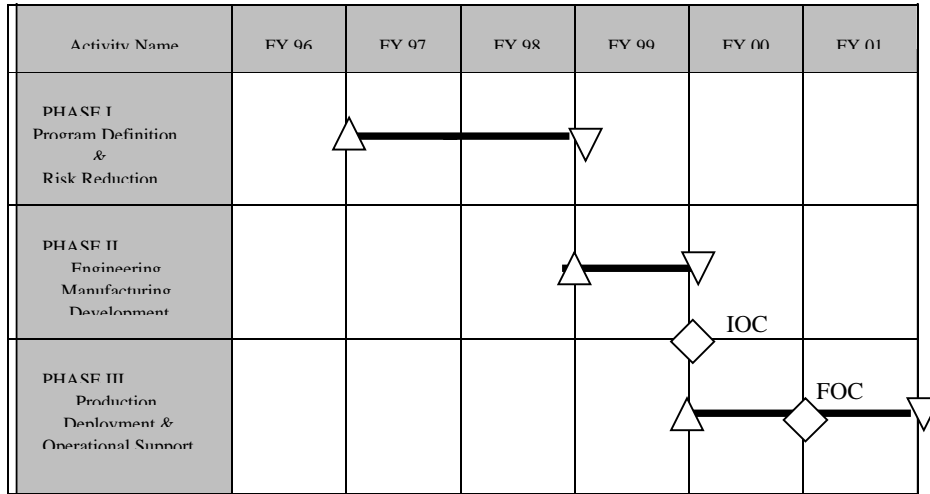
The current overall TCS program schedule may be seen in Figure 1-2. The matching ILS program schedule may be seen in Figure 1-3. Level 1 milestone charts have been prepared for each logistic element and may be seen in Appendix A. These milestone charts have been initially validated by government Integrated Product Team (IPT) members, and will be updated as required.

### **1.9.1 Master Milestone Schedule.**

Significant TCS development, test and evaluation, and delivery milestones will be made part of the master schedule, including prototype test completion; first prototype delivery; technical evaluation (TECHEVAL), OPEVAL, approval for LRIP and full rate production, and the production delivery schedule. The master schedule will be traceable to the critical path method (CPM) network. The government will develop the CPM network. The government will develop the master milestone schedule. (See section 2.3.3.)

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## TCS Overview Schedule



**FIGURE 1-2**

### *TCS Master Program Schedule*

#### **1.9.2 Tailored Networks.**

Using the master network, individual tailored networks that address all logistic elements required to support TCS, support equipment, and training equipment/trainers, to and including level 3 of the work breakdown structure (WBS) will be prepared and provided by the government.

#### **1.10 ILS Budget.**

PEO(CU)-PM TS and the logistics managers (LMs) will develop the TCS ILS program budget in accordance with the APML Acquisition Logistics Management Guidebook, paragraph 6.3. The budget will be synchronized with the master milestone schedule, and be prepared in logistic requirements and funding summary (LRFS) format.

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Task Name	1997	1998	1999	2000	2001
TCS Program Reviews/Logistics IPTs		◇ ◇ ◇ ◇			
TCS Design Reviews	“PDR” ◇	◇ “CDR”			
<b>LOGISTICS SUPPORT ANALYSIS</b>		△ ——— ▽			
LSA Data Exchange/Delivery		▽ ▽ ▽ ▽			
<b>TRAINING</b>	▽	—————	—————	—————	▽
Conduct FEA/Develop NTSP	△ ——— ▽				
Military Characteristics Documents		△ ——— ▽			
Develop Training Courses		△ ——— ▽			
‘O’ Level O&M		△ ——— ▽			
‘I’ Level Maintenance			△ ——— ▽		
‘D’ Level Maintenance					△ ——— ▽
Conduct Initial Training Courses			△ ——— ▽		
<b>Computer Based Training</b>		△ ——— ▽			

**FIGURE 1-3**  
**TCS ILS Program Schedule**

## 1.11 Joint Continuous Acquisition and Life-Cycle Support (JCALS).

Joint Continuous Acquisition and Life-Cycle Support (JCALS) is becoming a very important part of the DoD’s business approach. The intent of JCALS is to improve the timeliness, reduce the costs, and improve the quality of defense system acquisition and support. This goal is to be accomplished through the general adoption of a set of procedures and standards for the production, access, management, maintenance, and distribution of technical data in digital form. This goal will enable more effective creation, exchange, and use of data for defense systems and equipment. To the maximum extent possible JCALS will be utilized with the TCS program.

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## **1.11.1 Contractor Integrated Technical Information Services (CITIS).**

Links between the contractor's logistics, design engineering, and manufacturing data and functional processes, are to be automated to facilitate the transfer of technical information among them, and the creation, integration, storage, exchange, and on line sharing of digital information with the government and associated contractors. The CITIS provides:

- Integration of digital processes and data bases for the generation, storage, indexing, distribution, and delivery of integrated design and logistic information products.
- Unrestricted government access to contractor Logistics Support Analysis Record (LSAR) data bases and analysis tools with "read only" capability, including government query from government terminals, on site and on line government access to CITIS, and government terminal interface.
- Magnetic tape in digital format for delivery of bulk data to the government.

### **1.11.1.1 CITIS Functional Area Data Requirements.**

The CITIS is to include the following functional areas. Data to be accessed are detailed in each section of this JILSP, as indicated below.

- a. Automated interface between the engineering design and LSAR data bases.
- b. Engineering graphic and text file data (see sections 6 and 8).
- c. ILS management and phased support data (see sections 2 and 9).
- d. Reliability and maintainability (including failure mode and effects analysis) automation and LSA interface (see section 3).
- e. LSAR data (see section 3).
- f. Reliability-centered maintenance (RCM) data (see section 3).
- g. Level of repair analysis (LORA) data (see section 3).
- h. Training data (see section 4).
- i. Electronic Interactive Technical Manuals (IETMS) (see section 5).
- j. Support equipment (SE) recommendation data (SERD) and other SE data (see section 6).
- k. Supply support data (see section 7).

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- l. Packaging, handling, storage, & transportation (PHST) data (see section 11).
- m. Product configuration baseline, and ECP and configuration status accounting data (see section 12).
- n. TCS and support equipment failure and maintenance data (see section 15).

## **1.12 Warranty.**

Warranty requirements for TCS and support equipment must be developed in accordance with NAVAIRINST 13070.7 and NAVAIRNOTE 4855 dated 17 May 1989. The warranty must address contractor responsibilities for equipment that does not meet design and manufacturing requirements, has defects in materials or workmanship, or does not meet essential performance requirements. Organic repair of warranted items will be permitted without voiding the warranty.

### **1.12.1 Warranty Implementation.**

The impact of the warranty will be determined through the logistic support analysis (LSA) process. Warranty information will be integrated in maintenance plans (MPs) developed as indicated in section 3, and in technical manuals produced in accordance with section 5. Warranty marking for initial/replenishment and interim support spares will be as indicated in sections 7 and 9 respectively. Warranty marking of non-reusable containers will be in accordance with section 11.

### **1.12.2 Warranty Execution.**

The contractor will perform repairs and furnish repair data on warranted items that are beyond the then established government organic maintenance capability. The government will repair warranted items at the maintenance level that is determined by LSA and detailed in the maintenance plan. Warranty failures and repairs will be documented by each user service's individual requirements.

## **1.13 Cognizant Field Activity Designation.**

PEO(CU)-PM TS will coordinate and designate (Prospective) TCS Product Support Directorate/Cognizant Field Activity (PSD/CFA) in accordance with NAVAIR Instruction 5400.120A. The TCS Program Manager (PM) will develop the TCS and Equipment Transition Plan with support from the PSD, IPT, and other functional divisions. The PM will establish transition start and completion dates for program management, basic design engineering, and logistic management. Transition of logistic

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element management will start at MSD and be completed at the time of the last site activation.

## **1.13.1 PSD/CFA Support.**

The contractor is to provide support for government PSD/CFA capability development, and assist in the transition of TCS and support equipment hardware and software basic design engineering and logistic management responsibility from the contractor and Program Executive Officer for Cruise Missiles and Unmanned Aerial Vehicles (PEO(CU)) to the designated government PSD/CFA.

## **1.13.2 PSD/CFA Planning.**

After PSDs/CFAs have been designated, they will commence capability development planning. End milestones are to be in consonance with the TCS and Equipment Transition Plan and Appendix A, as adjusted by CPM network analysis.

## **1.14 Environmental Requirements.**

Environmental aspects of potentially hazardous TCS and support equipment materials and repair processes will be identified, examined, and reported by the contractor through the logistic support analysis (LSA) process. (See section 3.)

## **1.15 ILS Management Requirements.**

ILS management requirements include the master milestone schedule, CPM-based ILS program status reports, tailored networks, network status summary/progress reports, ILS resources information, JCALS plan, and streamlined ILS proposals.



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## **2. ILS PROGRAM MANAGEMENT**

### **2.1 Objectives.**

The objective of this section is to integrate and control TCS ILS program requirements, schedules, and costs in a manner that results in the delivery of cost-effective maintenance capability and material support at each site.

### **2.2 Scope.**

The scope of the ILS management requirements addressed herein includes the tasks, procedures, and products defined in Type-D Process Specifications, including NAVAIR ILS Process Specification AL-082AA-LPS-080, Logistics Integration/management.

a. Management requirements that are detailed herein apply through the end of the Engineering & Manufacturing Development (E&MD) phase now scheduled throughout the fourth (4th) Quarter Fiscal Year 1999.

b. Management requirements apply to all contractor furnished equipment (CFE) and all government furnished equipment (GFE) excluding the various computers and electronic components that are common to other DoD weapons systems.

c. Management requirements apply to all logistic elements and to interface management of related programs.

### **2.3 ILS Program Management.**

ILS program management involves organization and management procedures, schedules, documents, and controls.

#### **2.3.1 ILS Organization.**

The TCS ILS organization is staffed with personnel from PEO(CU), NAVAIR, U.S. Army MICOM, field activities, operational user activities, and contractor organizations who are each tasked with specific roles and responsibilities.

##### **2.3.1.1 PEO(CU) Integrated Product Team (IPT) ILS Organization.**

The government's ILS Integrated Product Team (IPT) organization consists of PEO(CU)-PM TS and a team of government and contractor logistic managers (LMs).

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PEO(CU)-PM TS has a staff that addresses administrative, business (contractual and budget), scheduling, and site activation issues. The TCS IPT organizational chart is presented in Figure 2-1. The government portion of the government/contractor IPT will be functionally responsible to PEO(CU)-PM TS and will assist him/her in discharging duties and responsibilities on all matters relative to TCS logistic support. Table 2-1 lists government IPT and associate IPT members.

## 2.3.1.1.1 Responsibilities.

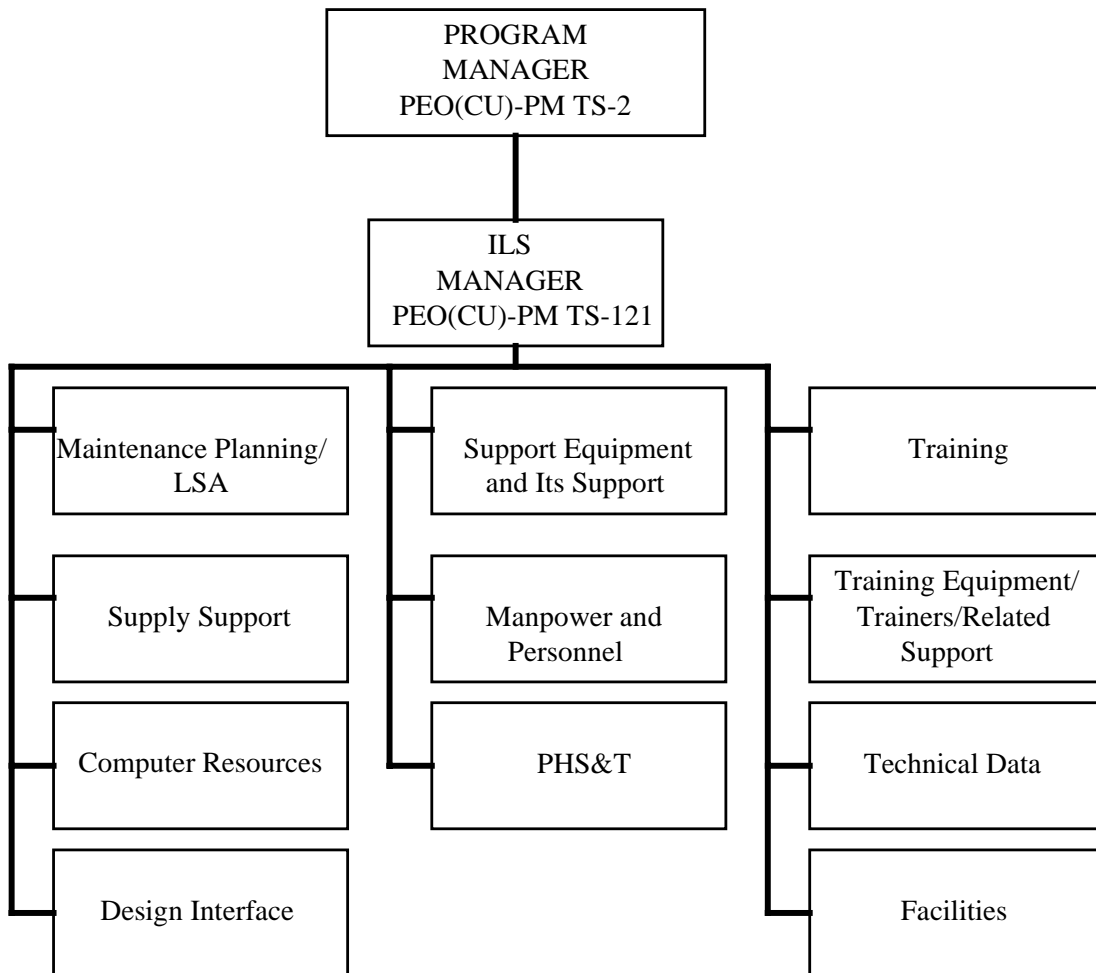
Responsibilities of each element of the PEO(CU)-PM TS organization is defined below:

- **ILS Manager.** The ILSM, under the guidance of PEO(CU)-PM TS is charged with establishing and managing ILS program objectives, policy, planning, and budgets.
  - The ILSM is a principal assistant to PEO(CU)-PM TS in all matters pertaining to logistics, and will act as the chairman of the government/contractor IPT.
  - With the assistance of the government IPT members, the ILSM will prepare the ILS statement of work for each phase of the TCS program.
  - The ILSM is the single government point of contact for all matters pertaining to the logistic program.
  - The ILSM has overall responsibility for planning, integrating, and delivering all required logistic elements, and assisting in development of maintenance capability at T&E and operational sites. Responsibility also includes management of logistic support analysis/maintenance plans (LSAs/MPs), phased support plans (PSPs), master index of repairables, if required, and readiness improvement program (RIP) packages.
- **LMs.** The logistic managers are responsible for the planning, procurement, and delivery of their individual logistic elements in accordance with overall ILS program requirements. Government LMs currently designated in the IPT charter are as shown in Figure 2-1, and Table 2-1 lists LMs and other non-LM members associated with the ILS program. One contractor representative will be designated as a counterpart for each LM. Note, one individual may be assigned to multiple positions and responsibilities to streamline the logistics organization.

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Figure 2-1

## Government TCS ILS Organization



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**Table 2-1**

## Government IPT and Associate IPT Members

GOVERNMENT MEMBERS				
NAME	CODE	ORGANIZATION	FUNCTION	TELEPHONE
Capt. Mike Witte, USN	PEO(CU)-PM TS	UAV JPO	TCS Program Mgr.	(301) 757-5879
Ms. Lisa Coluzzi	PEO(CU)-PM TS-2	UAV JPO	TCS Engineering	(301) 757-5881
Mary Lee Shell		UAV JPO	Contracts	
TBD	AIR 3.1.3.1	NAVAIR	TCS APML/ILS Mgr.	
TBD	AIR 3.1.3.1	NAVAIR	Supply (NAVICP/ASO)	
TBD	SFAE-UAV-LO	USA MICOM	TUAV/TCS Logistics	
TBD		UAV JPO	HAE/TCS Logistics	
LtCol Chris Mendez	ASL-34	CMC-ASL	USMC UAV Logistics	
LTC Stephen Tate, USAF	PMPS2	UAV JPO	Predator/TCS Logistics	(301) 757-6293
Stephanie Wood	PMA263D4	UAV JPO	Pioneer/TCS Logistics	(301) 757-5802
Walt Malley	PMA 205 -5E-PM	NAVAIR	Training Systems	
Sonny Haskins		TRADOC/TSM	TUAV Training	
Col. Fulcher, USA		USACOM	Operational Coordination	
Dave Kreider	NSWCDD/L43	NSWC-DD	System Engineering	(540) 653-8299
Jim Jones		JTC/SIL	System Engineering	(205) 876-0554
Steve Hussman		NSWC-DD	Data Link	(540) 653-6824
Scott Price	PEO(CU)-PM TS-22	UAV JPO	Test & Demo	(301) 757-5864
Brad Hall		NAWC-AD(PR)	Maintainability	
ASSOCIATE MEMBERS				
NAME	CODE	ORGANIZATION	FUNCTION	TELEPHONE
Tim Piester		EG&G, WASC	TCS IPT Team Leader	(540) 663-9310
Dick Feierabend			Logistics Support	(540) 663-9372
Jon F. Ault		NSM Corp.	TCS IPT Co-Lead	(301) 737-1661
Ron Luzier				
Doy Dickinson	Contractor	SMT, Inc.	TCS Training/MPT	
Charles Moore	Contractor	Battlespace, Inc.	UAV Support	(703) 413-0556
Manny Garrido			Operational Coordination	((703) 413-0556
Wayne Ouzts		TASC	Test & Demo	
Jim Avery		ATK	TUAV	(612) 931-6604
Keith Spreuer		General Atomics	MAE/Predator PM	(619) 455-4286

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## **2.3.1.2 Navy Field Activity and Military Organizations.**

The organizations of the PSD, are structured to efficiently permit communications between comparable elements of PEO(CU)-PM TS and contractor's organizations.

PSD Organization. The PSD is organized in parallel with commodity groups so that a one-to-one relationship exists with the PEO(CU)-PM TS LMs. Figure 2-2 illustrates the PSD organization.

## **2.3.1.3 Contractor's ILS Organization.**

The contractor's ILS organization is composed of the ILS Director, a team of product support personnel, and logistic support specialists. The product support personnel report to the Product Support Director and are responsible for the day-to-day interfaces with the government LMs. The logistic support specialists report directly to the ILS Director and are responsible for the day-to-day interfaces with the ILSM and LMs. The contractor's organization is illustrated in Figure 2-3.

## **2.3.2 ILS Program Procedures.**

The procedures that will be followed in the execution of the ILS program are outlined below. The government ILSM and Contractor ILS Director will establish near-term program objectives, and mutually agree to priorities that are required to achieve these objectives. The tasks required to meet these objectives will be scheduled and monitored through conferences, audits, and evaluations. The detailed procedures that will be used by the government and the contractor are identified below.

### **2.3.2.1 Government Conferences (Government Personnel Only).**

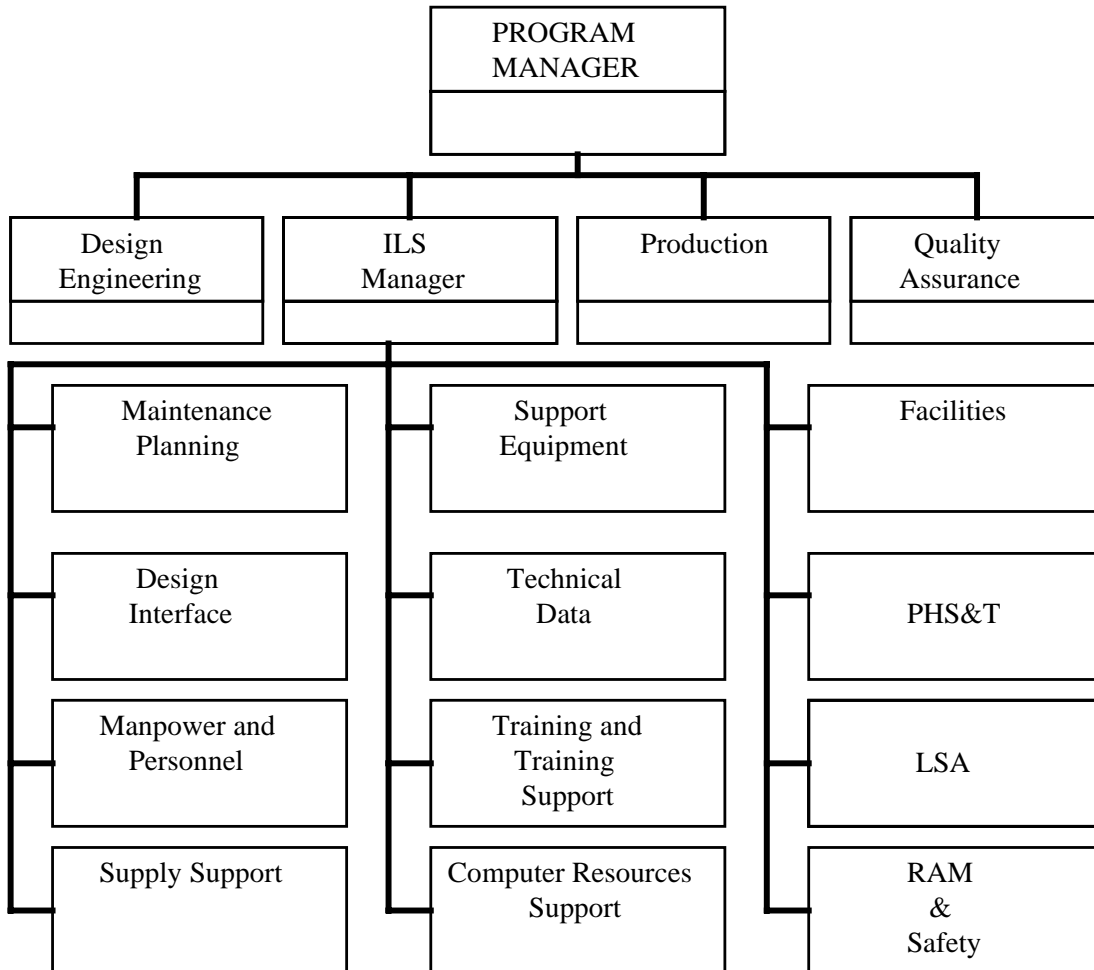
Internal government efforts will be managed as outlined below.

a. PEO(CU)-PM TS Staff Meetings. The ILSM will attend weekly staff meeting, during which PEO(CU)-PM TS will provide the status of the most recent events that impact the TCS acquisition program. Additionally, each staff member (including ILSM) will present issues that have surfaced in the past week and report the status of prior tasking. Once a month, the ILSM will present an ILS program status briefing to PEO(CU)-PM TS.

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Figure 2-2

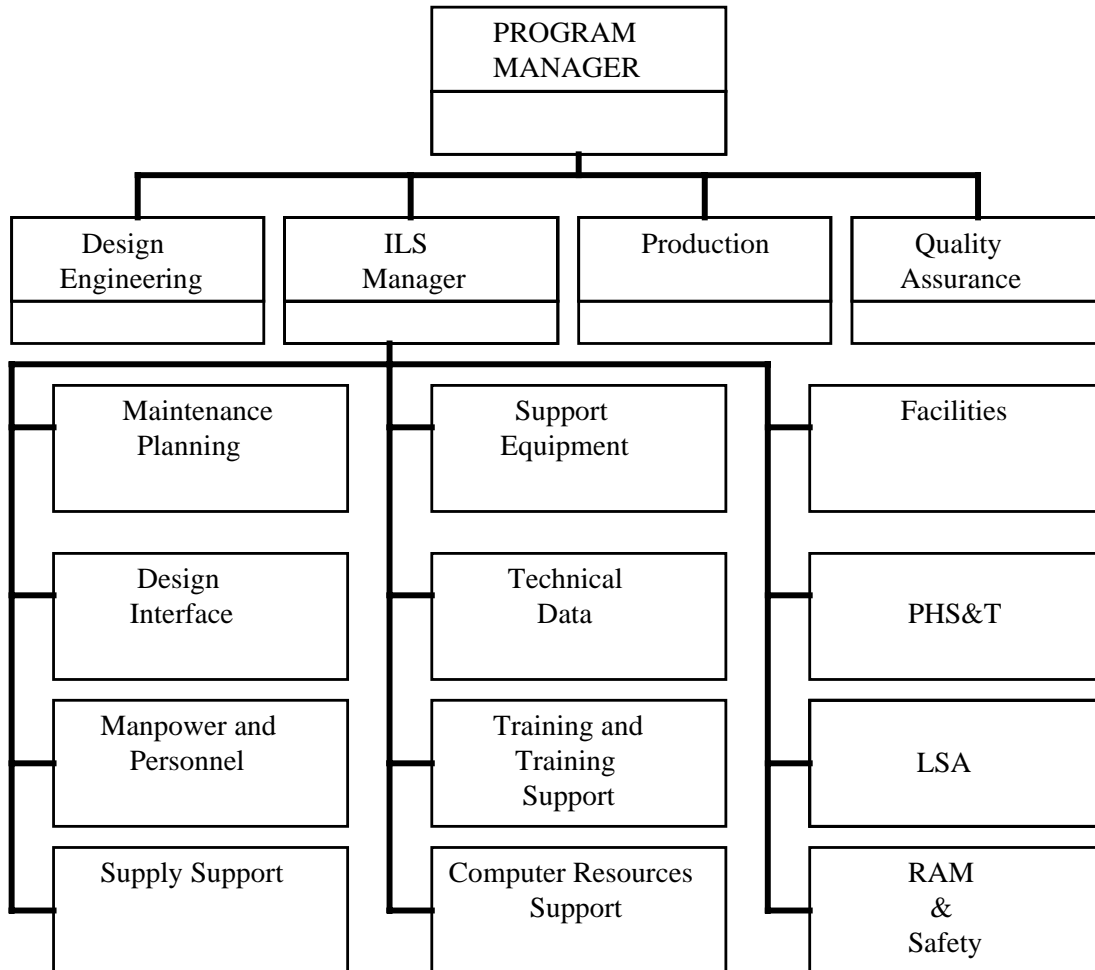
## PSD ILS Organization



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Figure 2-3

## Contractor's ILS Organization



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b. ILSM Staff Meetings. The ILSM will convene weekly staff meetings. The ILSM will present program status information that was briefed at the Program Manager's staff meeting. The ILSM will task his staff to obtain inputs on the issues that require resolution.

c. IPT Meetings. Once a quarter, the ILSM will convene IPT meetings. At these meetings the ILSM will convey the status of the overall program, as determined from the PEO(CU)-PM TS and TCS PM staff meetings, and review the status of each logistic element relative to logistic requirements identification, support procurement, and support delivery to T&E and operational sites.

d. Logistic Requirements and Funding Summary (LRFS) LRFS/Contract Meetings. The ILSM's Business manager will meet with the LMs/IPT members periodically and provide planning data including the WSPD, base loading, the acquisition plan, and related information. The LMs will provide budget requirements to the ILSM. The ILSM will present the logistic requirements and funding summary (LRFS) to the TCS PM and to other appropriation sponsors, and receive the funding profiles. The ILSM will meet with the procuring contract officer (PCO) to ensure that ILS contract requirements for initial E&MD provisioned orders and production are integrated into the ILS program.

## **2.3.2.2 Government and Contractor Meetings.**

The ILSM will manage the execution of the ILS program through a series of conferences and evaluations which are jointly attended by both contractor and government personnel.

### **2.3.2.2.1 Integrated Product Team (IPT).**

The primary management organization of the ILS program is the IPT. The ILSM will chair the logistics IPT meetings. IPT composition will vary, depending on the phase of the program. Each IPT meeting will emphasize a specific theme(s) that conforms to the particular sub-phase of development. The purpose of the theme is to serve as an "umbrella" under which the subjects and presentation material of the IPT meeting are organized.

Planning for each IPT meeting will begin 30 days prior to the scheduled meeting. At that time the ILSM and the contractor's ILS Director will jointly agree to an agenda, the format of the IPT (open forum or working group), the personnel responsible for each of the agenda items, and the meeting location. Fifteen days prior to the IPT meeting, the agenda will be approved by government message that includes a request to identify attendees. The IPT meeting will be convened at a location that best reflects the theme. The contractor will provide the following support for the IPT:

- A conference facility sufficient to accommodate up to 25 government and contractor personnel.



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- Dedicated personnel that will type all action items. The action items will be typed and available on paper copy and on view-graphs no later than 24 hours after they are written.
- Audio/visual aids equipment to be used during IPT presentations.
- An official recorder for documenting and preparing draft IPT meeting minutes.

## 2.3.2.2.2 Integrated Program Team (IPT) Meetings.

The IPT meetings are the forum used by the ILSM in which all activities (PEO(CU), field activities, and contractor) concerned with providing support for TCS are represented. This multi-presentation permits IPT members to solve certain types of problems/issues that cross areas of responsibility and chains of command. At IPT meetings it is possible for representatives of all activities involved with a particular problem to assemble for the purpose of problem definition and resolution.

Additionally, IPT meetings are structured during the production and deployment phase to:

- Provide operational users representatives with an overview of present and planned logistic support and actions that will have an impact on support for TCS.
- Identify deficiencies and problem areas that may adversely affect support, and to determine corrective actions.

## 2.3.2.2.3 IPT Meeting Functions.

IPT meetings provide for:

- Formal presentations on the status of logistic elements.
- Separate working group discussions on logistic elements (logistic support analysis and maintenance planning, support equipment, technical data, training, supply support, facilities, and other elements).
- Ad hoc meetings for purposes of discussing program issues that require representatives from more than one working group.
- Reports from individual working groups that summarize major issues discussed and the number of action items requiring resolution.

The IPT is structured to permit issues to be surfaced and resolved in a controlled and traceable manner. Any member of the IPT may submit issues for consideration at any time. Action chits will be forwarded to the appropriate working group for review, development of recommended completion dates, and action resolution.

**Working Groups.** Working groups assess and review the development of the TCS ILS program, and identify existing and anticipated problems/issues. This will include:

- Conducting a review of the progress of each logistic element and related areas.
- Reviewing open action chits from the previous IPT meeting.
- Submitting action chits to the steering committee for referral to other working groups.

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Each working group will be chaired by the appropriate government LM and co-chaired by the respective contractor's logistic manager. The working group chairman is responsible for ensuring that all action chits adequately describe the problem, contain pertinent data, and recommend completion dates. The review of action chits should include recommended solutions (and alternate solutions if appropriate).

A verbal status report will be delivered by each working group chairman during the IPT meeting. This report will summarize action taken during the day, current issues, and potential items for action by the entire IPT.

A verbal report summarizing working group actions and follow-up responsibilities will be delivered at the close of the IPT meeting by each working group chairman. Reports should include at least the following information:

- A brief description of major problems/issues discussed.
- Recommended solutions.
- Total number of action items processed.
- Number of action chits open.
- A list of working group attendees.
- Working group minutes.

Standing Working Groups. Standing work groups established and their corresponding government and contractor chairmen are shown in Table 2-2.

#### 2.3.2.2.4 ILS Executive Team Meetings.

When it is deemed by the ILSM as impractical to convene a complete (all member) IPT meeting, the ILSM may call into session an ILS Executive Team meeting. ILS Executive Team meetings are held in open forum to discuss logistic support issues.

a. ILS Executive Team Members. ILS Executive Team members are assigned by the ILSM and the contractor's ILS Director. Attendance is generally limited to working group chairman, the Procurement Contracting Officer (PCO)/Administrative Contracting Officer (ACO), the PSD/CFA, government and contractor class desk/engineering representatives, and during production and deployment, a limited number of Type Commander/user personnel, as required.

b. ILS Executive Team Meeting Discussions. During the ILS executive team meeting, each logistic element area is required to provide status and information on current problems. Additionally, during production and deployment, user activities are required to provide discussion items and support problems. Action chits from the previous IPT meeting will be reviewed and, if required, new action chits may be developed and published to all IPT members.

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Table 2-2

## IPT Working Group Chairmen

WORKING GROUP	CHAIRMAN (GOVERNMENT)	CO-CHAIRMAN (CONTRACTOR)
LSA/LSAR/Maintenance		
Maintenance Planning		
Support Equipment		
Supply Support/PHST		
Manpower/Personnel and Training	W. Malley X. PMA 205-5E	
Technical Data		
Facilities		

### 2.3.2.2.5 ILS Business Reviews.

The ILSM, the ILSM's business manager, and the contractor (ILS Director and business manager) will meet periodically (usually just prior to the PEO(CU)-PM TS's business review), and review the status of contractual activity. As a minimum, both the government and the systems integration contractor will address:

- Status of ILS deliverables.
- Status of "provisioned orders" processing.
- Status of production planning.
- Contractor's estimate for current and future ILS resource requirements.

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## **2.3.2.3 Tradeoff Studies.**

As the ILS program progresses, opportunities, problems and solutions will be identified. Tradeoff studies will be used to support the decision process. The ILSM and ILS Director will, after opportunities have been identified, select those critical issues for supportability improvement and trade studies must be accomplished.

- Trade studies will be documented and staffed by the activity performing the study, either contractor or government, prior to decision implementation.
- Trade studies include LSA tradeoffs, particularly levels of repair, cost, and manpower.
- Trade studies will address tradeoffs between design and logistic support as well as tradeoffs between logistic elements.

## **2.3.3 ILS Schedules.**

The ILS program will be scheduled in coordination with the ILS master schedule, contract deliverables schedule, and meeting and conference schedules. These schedules encompass both government and contractor events, and serve as the baseline against which all program progress is measured. (See section 1.8.1)

## **2.3.4 Management Documents.**

Key documents that will be used to manage the ILS program are the JILSP and IPT meeting documentation, the interim support plan, phased support plans, and the LRFS.

### **2.3.4.1 IPT Documentation.**

The IPT will publish IPT meeting agenda, action chits, meeting minutes, and status reports.

a. ILS Action Chits. During the conduct of the IPT meeting, any individual may submit an action chit describing a problem and recommending a solution. The action chit will be reviewed in an open forum and be approved or disapproved. All approved action items will be included in the IPT minutes. The contractor's ILS Director will sign all action chits. The ILSM's evaluation manager will monitor the status of all IPT meeting action items

b. IPT Minutes. The minutes of the IPT meeting represent the official record of key management decisions relative to the ILS program. The minutes serve as a medium to emphasize priorities, provide direction for resolution of problems/issues, and provide program status. Following the IPT, the minutes will be assembled, approved, and sent to all attendees. The action chits will be included in the IPT minutes. The steering committee

will assemble and edit draft minutes from working group and other official minutes, and submit the draft to the ILSM for review. Following review by the ILSM, the contractor will update the minutes. The ILSM will approve the minutes by signing the cover page

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and the forwarding letter. The approved minutes will be returned to the contractor to make distribution.

## **2.3.4.2 Phased Support Plans (PSPs).**

PSPs serve as the primary communication link between the ILSM and operational field sites relative to the planning and status of maintenance capability and material support at the hardware and software group level. The PSP schedules the date a particular site will possess the logistic support assets for development of organic maintenance capability for a particular hardware or software group. The systems integration contractor will develop phased support plans. These plans will be reviewed and approved by the LMs. The contractor will:

- Categorize TCS in groups that are separately identifiable by O, I, and D level work centers.
- Develop draft PSPs for each hardware group.
- Develop draft PSPs for each software group.
- Review the draft PSPs with the LMs to ensure that the PSPs reflect the level of detail required to manage the delivery of logistic resources.
- Finalize and publish PSPs to the LMs, depots, and PSD/CFA.

## **2.3.4.3 Interim Support Plan.**

The master milestone schedule indicates milestones required to achieve contractor (interim) support and organic support. (See Appendix A and section 9) Planning for interim support for the T&E site and the first operational site is to be documented in a contractor support plan. The contractor prepares the interim support plan and the ILSM approves it. The contractor identifies in the draft plan all support requirements and plans for meeting these requirements, including:

- On-site and off-site personnel.
- Interim support equipment.
- Temporary facilities (on-site and off-site).
- Interim management information system requirements.
- Proposed host/tenant agreements.
- Quality control procedures.
- Operating procedures.
- Administrative support requirements.
- Support of government furnished equipment (GFE).

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## **2.3.4.4 Logistic Requirements and Funding Summary (LRFS).**

The ILS program requires funding to develop and procure the logistic support, fund field activity efforts, and acquire related support. ILS program requirements are identified and aggregated in the LRFS. The LRFS presents both funding required and funding available. The LRFS is part of the budget review process and it supports the POM. Consequently, all ILS program funding requirements must be documented in the LRFS.

- The LRFS will address current year plus five years, all funding requirements, and all required appropriations and budget activities (e.g. acquisition plan (AP) and O&M funds, etc.). The ILSM will, at least once a year, provide program planning data to the LMs and request inputs for the LRFS.

- The ILSM will obtain, from PEO(CU)-PM TS and other appropriate sources, funding availability data.

- If funding requirements and funding availability do not match, the ILSM and LMs will identify the impact of the shortfalls and develop and forward budget reclama data.

## **2.3.4.5 JILSP Revisions.**

The JILSP will be reviewed during each IPT meeting, and will be updated after each IPT meeting by the ILSM with support from the LMs. All JILSP revisions will be subject to ILSM approval with team concurrence.

## **2.3.5 Management Controls.**

The ILS program emphasizes the use of evaluations and audits, internal contractor controls, and JCALS for ensuring that program priorities are met and progress is being made.

### **2.3.5.1 Evaluations and Audits.**

The Logistics Manager (LM)'s evaluation manager periodically will conduct TCS ILS program evaluations. These evaluations will assess the degree to which AIRTASK requirements are being completed and the degree to which contractual requirements and schedules are being met. The government field activities and the contractor will support these efforts.

The ILS program will be audited by the Logistic Review Group (LRG). The Logistics Manager (LM)'s evaluation manager will plan and coordinate the response to ILS ASSESSMENT findings. (See section 2.4.)

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## 2.3.5.2 Internal Contractor Controls.

The design of the support system must reflect the physical configuration audit (PCA) configuration of TCS and support equipment. The contractor must implement the following internal controls:

a. The contractor must establish a drawing release board with membership that includes the Engineering Director, the ILS Director, the Product Support Director, the Manufacturing Director, the Quality Control Director, and the Configuration Management Director. This board reviews the request for and release of all drawings.

b. The contractor must establish a system wherein logistic specialists and design engineers establish a baseline memorandum of understanding that defines the key supportability requirements to be designed in, and the key design requirements to which the support system must be designed. The agreement should be established at the beginning of the program. As the design of the support system progresses and as the TCS design progresses in accordance with this document, any deviation in design or support planning must be mutually agreed to, and the memorandum is to be revised and signed.

c. The records of the drawing release board and the signed memorandum of understanding are to be made available for government inspection at the contractor's facility.

d. All new and revised production drawings must be reviewed and signed off by the ILS Director, or the designated representative within the contractor's ILS organization responsible for conducting the LSA, prior to the release of the drawings for production.

e. All changes to the design of TCS that are made by the contractor that do not require formal government engineering change proposal processing must be reviewed by the individual within the contractor's ILS organization responsible for conducting the LSA, prior to the release of the changes.

f. Prior to a submission to the government, all Class I engineering change proposals (ECPs) must be reviewed by the individual within the contractor's ILS organization responsible for conducting the LSA, and data on the impact on ILS will be submitted with the ECP. (See section 12.)

g. All individuals in the contractor's ILS organization who conduct the LSA must review all production/change drawings and ECPs prior to the release of these documents. LSA personnel must indicate whether the design impacts ILS requirements by submitting a design review and comment sheet to the engineering director.

- All design review and comment sheets must be satisfactorily answered by the designer prior to drawing release.

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- In those cases where the designer does not satisfy all the design review comments, the areas of disagreement are to be presented to the ILS Director and Project Manager for resolution.
- These review and comment sheets must be made available for government review when requested.

h. The contractor's ILS organization must ensure the accuracy of the design information used in the LSA process. This will be accomplished by the use of supportability design baseline documents signed by both the ILS Director and the Engineering Director. These documents are to be available for government review at the contractor's plant on an as-required basis.

## **2.3.5.3 Supportability Test and Evaluation. (See section 10.)**

## **2.3.5.4 Joint Continuous Acquisition and Life-Cycle Support (JCALS).**

The intent of JCALS is to improve the timeliness, reduce the costs, and improve the quality of defense system acquisition and support. This goal is to be accomplished through the general adoption of a set of procedures and standards for the production, access, management, maintenance, and distribution of technical data in digital form. This goal will enable more effective creation, exchange, and use of data for defense systems and equipment. To the maximum extent possible JCALS will be utilized with the TCS program.

*The first part of JCALS, now being implemented, is focusing on phasing out paper document transfer, in favor of electronic file exchanges. A longer-term JCALS objective is to develop integrated product databases and create advanced engineering and manufacturing systems such as CITIS.*

*CITIS is a computer-based service that draws upon integrated technical information from throughout a contractor's enterprise to support the product development process. Instead of program and product documentation (typically paper deliverables) being prepared and sent, program and product information may be viewed and manipulated at workstations across a network that includes most Government data users.*

*Technical manuals will be developed in digital format suitable for display on equipment with hard copy print-out capability. The format shall be JCALS compatible. and use of Interactive Electronic Technical Manuals (IETMs) will be evaluated.*



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## **2.3.6 ILS Production/Deployment Planning.**

One of the goals of ILS program management is to plan for production and deployment to the extent that all the resources required for the organic O-level capability and interim support are procured on a firm fixed-price basis, and concurrently with the initial TCS production order.

## **2.4 ILS Assessments and Certification.**

Prior to each TCS program milestone (e.g., Milestone I, II, and III), a Chief of Naval Operations (CNO) ILS Assessment will be conducted on its ILS program.

### **2.4.1 Integrated Logistics Support Manager (ILSM) Role.**

When the ILSM is notified that the TCS program has been scheduled for an ILS Assessment, he will:

- a. Contact the ILS Assessment team leader in AIR 3.6.3.1. and provide the conference room location for both the audit pre-brief and the formal audit.
- b. Notify all LMs assigned to the program that the audit has been scheduled.
- c. Prepare, in coordination with the PM, a program brief for the audit team that is to be presented on the scheduled pre-brief date.
- d. Ensure that all required program and logistic documents are collected and assembled in an audit library for review by the audit team.
- e. At the conclusion of the audit, prepare, in coordination with the PM, a POA&M for any findings (deficiencies) identified during the audit.

## **2.5 ILS Management Requirements.**

ILS management requirements include IPT agenda, IPT meeting minutes, ILS action chits, ILS action chit status reports, the ISP, the PSP, CPM network with GANTT charts, and interim support plans for T&E sites and the first operational site.

## **2.6 Subcontractor Participation.**

**TBD**

## **2.7 Joint ILSP Description.**

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This JILSP addresses all elements of logistic support for TCS ILS program. It describes and documents both government and contractor responsibilities for planning and managing the ILS program. It covers the total logistic support resources required during the life-cycle of the program and provides for coordinated, systematic planning, development, acquisition, distribution, and management of all elements of logistic support.

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## 3. MAINTENANCE PLANNING/LOGISTIC SUPPORT ANALYSIS

This section provides planning and information required for the execution, review, and approval of TCS and SE maintenance planning with a focus on logistic support analysis (LSA) and its principal outputs.

### 3.1 Maintenance Planning/LSA Objectives.

The purpose of maintenance planning including LSA is to ensure that integrated and effective logistic support is provided for TCS. The overall objectives of the LSA program are to:

- Cause supportability requirements to be an integral part of design.
- Eliminate, simplify, and reduce requirements for external (to TCS) support resources.
- Define support requirements that are optimally related to the design and to each other.
- Define the support required during the operational phase.
- Prepare attendant data products.

*Maintenance planning information must be developed to facilitate initial fielding plans for the TCS's support structure. Maintenance Planning Summaries may also be used to :*

- *Verify the maintenance actions and support structures are aligned with the governments requirements and maintenance concept.*
- *The information must be specified for system components to a level of detail specified.*
- *The repairable items should be identified within the hierarchy of the TCS, broken down in accordance with configuration control procedures*
- *Preventive and corrective maintenance actions and required spares and support equipment must be identified.*
- *Detailed description are needed for each maintenance action to include elapsed time of maintenance actions, task frequency, failure rate of an item and mean time to repair.*
- *Sensitivity evaluations should be conducted to assess how variations in input parameters affect the baseline maintenance concept and associated risks.*

*Coordination and interface is required between engineering and logistics functional elements to determine usage data, and R&M, spares cost factors and comparable repair time for similar systems.*

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## 3.2 LSA Plan Summary & Process.

The logistics analysis process shall accomplished in accordance with MIL-STD-1388-1 and the Logistics Management Information(LMI) process tailored to fit program requirements. The resulting data, when applicable, shall be recorded in the Logistics Support Analysis Record (LSAR) in accordance with MIL-STD-1388-2. The LSA program shall be the single analytical effort to evaluate design alternatives, to determine the most cost efficient methods of providing logistics support, and to acquire data required to provide integrated logistics support.

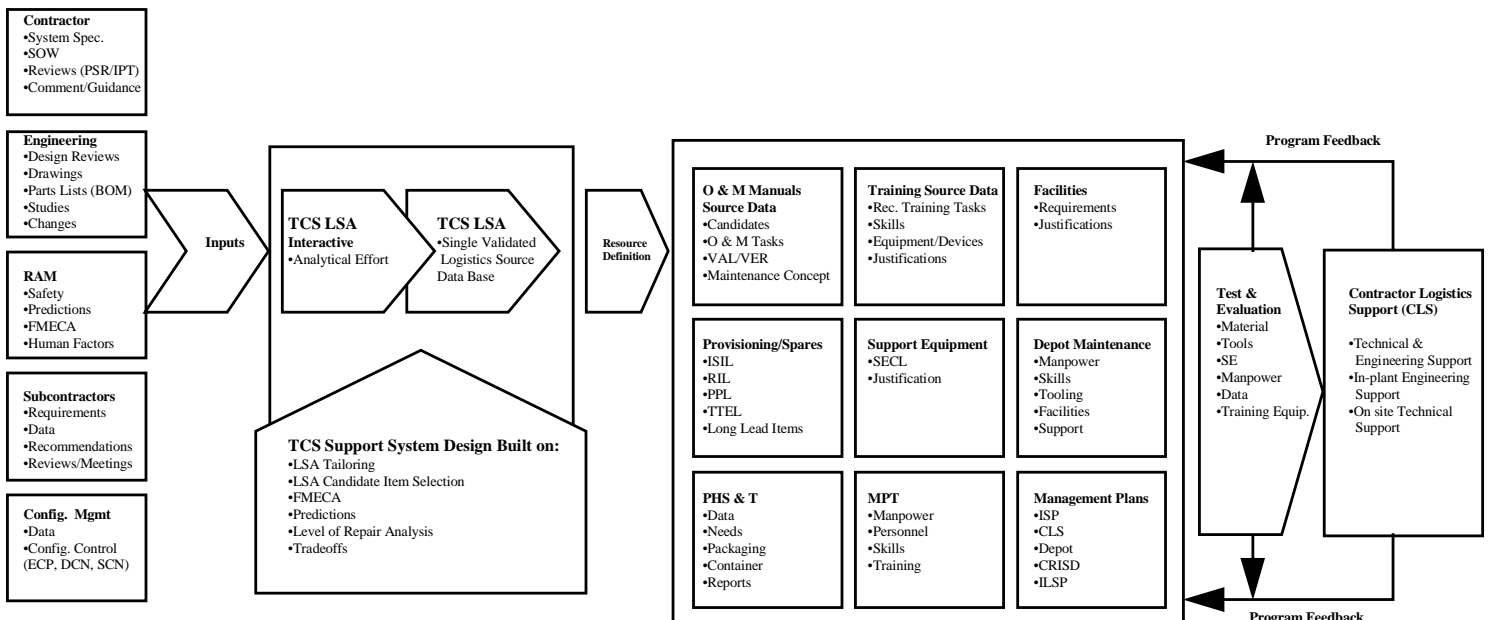
### 3.2.1 LSA Process

The TCS LSA process involves a series of systematic and comprehensive analyses performed on an iterative basis, through all phases of the equipment life cycle. The primary objectives are to:

- cause logistics considerations to influence design,
- identify early support problems and cost drivers,
- identify detailed ILS element resource requirements,
- optimally integrate the ILS elements, and
- develop and maintain a single logistics support data base (i.e., LSAR.)

Given the maturity of the TCS designs, the TCS LSA Plan describes the classical approach to LSA Planning,.

The major elements of the TCS LSA process are shown below in **Figure 3-1**.



**Figure 3-1 TCS LSA/LSAR Integration Process**

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When approved by the government, the LSA plan and the LSA A data table are to be included as Appendix B to this JILSP.

## **3.3 LSA Management.**

The LSA program will be organized, directed, and controlled in accordance with the approved LSA plan. LSA program management will account for, as a minimum:

- LSA milestone and resource planning and tracking.
- LSA data base management.
- Establishment of technical liaison between contractor design engineering and logistic engineering groups.
- Establishment of technical liaison with subcontractors, vendors, and government furnished equipment (GFE) manufacturers.
- Provision of supportability related inputs to the design process, and tracking of results.
- Attendance at design reviews, and action to ensure achievement of optimum TCS and SE maintenance and support characteristics without duplication of effort relative to design and logistics.
- Evaluation of logistic impacts of engineering changes prior to change submission to the government.
- Periodic LSA status and problem definition reports.
- Configuration control of LSA documentation including the LSAR.
- Data exchange and establishment and use of LSA feedback loops for correcting deficiencies indicated during TCS and SE testing and operation.

### **3.3.1 LSA Program Reviews.**

LSA program reviews will be conducted internally by the government at IPT meetings. Formal program reviews will be scheduled and conducted on a six month cycle during the contract period. The first LSA review should include as topics, at a minimum, LSA plan, LSA candidates, LSAR data elements, level of repair, and support equipment. Prior to or during the LSA guidance conference, the government will provide to the contractor the following data:

- LSAR A data table.
- Reliability-centered maintenance (RCM) requirements.
- Level of repair analysis requirements.
- Available skill level specialty codes to operate and maintain equipment.
- Identification of support equipment normally available at each level of maintenance.
- Identification of contents of common tool boxes.
- Description of facility requirements.
- Any required classified data and classified hardware.

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During the guidance conference the contractor will provide the preliminary LSA plan and LSA candidate list, together with rationale and functions of each repairable. Also, the contractor will provide rationale for the preliminary LSA control number (LCN), information on subcontractor and vendor roles, and data concerning the efforts to be expended on the LSA by life cycle phase.

## **3.4 LSA Program Constraints.**

The LSA program will be constrained as outlined below.

### **3.4.1 Data System Constraints.**

An automated data processing (ADP) system will be used by the contractor to store and process LSAR data. The ADP system may be the Joint Service LSAR ADP system. If an independently developed LSAR system is used, this system must be a government-validated, Type I LSAR ADP system. A complete audit trail will be developed and maintained. The audit trail will permit traceability of maintenance tasks back to specific engineering failure modes or damage modes, and of maintenance tasks to specify logistic resources required for these tasks.

### **3.4.2 JCALS/LSAR Constraints.**

The LSAR data base within the CITIS will be the central file for logistic data and all related technical information coming from other contractor data bases (see section 7.5). The contractor will develop automated links between LSAR and key LSA analytical techniques such as LORA and RCM. The contractor will provide the government with the capability to select, review on screen, and print pre-defined standard LSAR summary reports and provide a defined ad hoc report generation capability keyed on LSA control number (LCN).

### **3.4.3 Program and Operational Constraints.**

The LSA program will be guided by program constraints, such as the supportability test and evaluation (T&E) schedule. The LSA program will be guided by operational constraints outlined in section 1, including the TCS operational concept, plan for use, utilization rates, and operational readiness and availability. Operational mean time to repair (MTTR) data and operational mean time between mission critical failure (MTBMCF) data shall be used in the LSAR.

### **3.4.4 Logistic Constraints.**

When aggregated, certain LSAR data such as scheduled and unscheduled maintenance man-hours, maintenance and operation manpower, and time to repair and calibrate must meet established TCS ILS performance specifications. LSA tasks are to be guided by the TCS logistic support and maintenance concepts.

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## **3.4.5 Time Constraints.**

The LSA program is to be planned such that logistic element lead times are considered, that prototype logistic elements are available for technical evaluation and operational evaluation, and that all logistic elements are available prior to GSD. In addition, the LSA program is planned so that all tasks indicated below will be accomplished during the cited program phase.

## **3.5 LSA Overview.**

### **3.5.1 Program Initiation.**

LSA tasks during program initiation (Concept Exploration and Definition (CE&D) and Demonstration and Validation (D&V)) include analyses related to a use study, standardization analysis, comparative analysis, technological opportunities, supportability design constraints, functional requirements identification, support alternatives, logistic support and maintenance concepts, tradeoff analysis, preliminary task analysis, initial logistic element analyses, developing the preliminary maintenance plan. The focus of this phase is on development and analysis of TCS performance specifications including manpower limitations, support alternatives, and related tradeoffs and optimizations.

### **3.5.2. Engineering and Manufacturing Development (E&MD).**

TCS Engineering and Manufacturing Development (E&MD) LSA tasks include preventive maintenance, corrective maintenance, and task, skills, and time line and level of repair analyses. Updates to LSAR data and the supportability constraint comparison occur. Logistic element analyses are performed, along with tradeoffs, optimization, early fielding analysis, LSAR update and initial validation, and LSAR updates due to technical evaluation and operational evaluation. LSAR output reports are produced, including maintenance plans. After the TCS product baseline is established, the LSA tasks indicated above are iterated as engineering changes occur. The focus of this phase is the development of a validated, verified LSAR that will be used as a basis for logistic element development and fielding.

### **3.5.3 Production and Deployment.**

During this phase, LSA tasks include iteration of the engineering and manufacturing development LSA tasks for design changes, post production support analysis, and LSAR update and verification. The focus of this phase is on updating and correcting LSAR deficiencies that affect logistic elements, and on planning for post-production support.

### **3.5.4 Environmental Effects and LSA.**

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## **3.5.4.1 Prior to Milestone 0.**

Prior to Milestone 0, contractual requirements for program initiation and Engineering and Manufacturing Development (E&MD) related to the environmental effects of TCS and support equipment materials and repair processes will be developed. These requirements have not been developed.

## **3.5.4.2 During Program Initiation.**

To ensure control of the environmental effects of TCS and support equipment materials and repair processes, the contractor will identify and justify all materials and repair processes considered in system design and repair process development that may be environmentally hazardous. Tradeoff studies will be required. The contractor will provide specified documentation on hazardous materials and related repair processes, as part of the LSA use study and tradeoff studies.

## **3.5.4.3 During E&MD.**

During LSA and LSAR development, the contractor will be required to specially code all LSAR data related to TCS and support equipment materials, manufacturing and repair processes, training, facilities, and packing, handling, storage, and transportation that are environmentally hazardous. The contractor will provide specified documentation on hazardous materials and repair processes as an integral part of LSA. Results will also be documented in the LSAR and the narrative summary of the maintenance plan.

## **3.5.4.4 During Production and Deployment (P & D).**

As part of the engineering change proposal (ECP) process, the contractor is normally required to repeat all specified program initiation and E&MD LSA tasks for new materials, manufacturing processes, and repair processes that may be environmentally hazardous. Since this product is predominantly software and resides on systems already in existence, this section will be considered for tailoring out.

## **3.6 LSAR Data Table Review.**

All LSAR data tables will be made available at the contractor's facility for periodic auditing, review, and verification by the government team. All data tables will: (1) reflect the results of only actual analysis performed by, or on behalf of, the contractor, or (2) constitute government-furnished data.

- Data tables will not be considered complete until the TCS product baseline has been established, all LSAR data are updated to the then current design configuration, configuration control of the LSAR has been established, and deficiencies found during testing have been corrected.



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- The government team will indicate in subparagraphs the procedures for government access to LSAR data, phased and periodic submissions by the contractor, and the media for transmittal of LSAR data for government review at locations remote from the contractor.

## **3.7 LSAR and LSA Output Reports.**

LSAR data to be provided by the contractor (electronic media) include:

- Logistic Support Analysis Record (LSAR) Data Table exchange/delivery.

LSA output reports that are required are as indicated below:

- LSA-001, Annual Man-Hours by Skill Specialty Code and Level of Maintenance
- LSA-019, Task Analysis Summary
- LSA-024, Maintenance Plan
- *note: Always Required.*
- LSA-070, Support Equipment Recommendation Data (SERD)  
*note: Always Required*
- LSA-071, Support Equipment Candidate List associated with the host computer support equipment
- LSA-076, Calibration and Measurement Requirement Summary
- LSA-077, Depot Maintenance Inter Service Data Summary associated with the host computer support equipment.

## **3.8 LSAR Updates.**

During supportability T&E, which includes TECHEVAL and OPEVAL, key LSAR data are to be validated by the contractor and verified by the government. (See section 10 for overall supportability T&E requirements.) LSAR data are to be updated by the contractor to reflect supportability T&E results, including reliability and maintainability results.

## **3.9 Maintenance Plan Approval.**

TCS and SE maintenance plans will be reviewed by the ILSM to verify inclusion of revisions developed during supportability T&E. After review and necessary corrections, the PM/ILSM/ will approve maintenance plans for distribution by the contractor.

## **3.10 Design Interface.**

Data from related programs such as reliability and maintainability (R&M), Failure Mode and Critical Effects Analysis (FMECA) human engineering, and system safety are

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to be used by the contractor as inputs to the logistic support analysis process. The LSA interfaces of these programs are described below.

## **3.10.1 Reliability and Maintainability (R&M).**

Failure mode and effects analysis (LSA tasks 101 and 103) are required, and resulting data will be recorded in LSAR B tables. Subsequent R&M analysis will develop additional R&M predictions that will be recorded in B tables.

## **3.10.2 Human Engineering.**

*The type (design) specification requires a human engineering program.*

*The human engineering IPT, its processes and output products will be mutually defined by government and contractor. The human engineering IPT will focus on Design for Maintainer (DFM) considerations. MIL-STD-1472D, will be used as a guideline, along with best commercial practices. The IPT will concern itself with maintenance access, training, Built-in Test (BIT) design and operation and streamlined maintenance processes.*

*Results are to be used to feed task and skills analysis. Human engineering (HE) test and evaluation (T&E) requirements for the TCS shall be developed during the Demonstration and Validation (D&V) phase. This effort will include identifying the HE T&E issues, providing HE inputs into the TCS T&E plan to ensure that they are tested for adequacy and compliance with the TCS program, preparing HE test plans, conducting and documenting the results of HE T&E, and providing input to program reviews.*

*During the D&V phase an Human Systems Integration Plan (HSIP) will be developed in accordance with SECNAVINST 5000.2A. This plan will identify critical human system factors, address the manpower requirements and impact of TCS, address skills related requirements, discuss how HE will be applied to the design effort, and summarize how safety and health hazard lessons learned will be applied.*

## **3.10.3 System Safety.**

*A system safety program must begin early in the acquisition process to ensure that safety is optimally designed into the final TCS system. For the TCS program, system safety planning and implementation will be initiated early to ensure optimum safety in the delivered TCS system. A system safety program is required by the type specification, and results will feed task and skills analysis, the LSAR, and the resulting technical manuals.*

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## **3.10.4 Testability.**

Testability program tasks are developed, completely integrated with LSA, and summarized in section 4. *Fault Detection/Location (FD/L) to the Line Replaceable Unit (LRU) level shall be provided to indicate the readiness status of TCS.* 20

*As a minimum, TCS shall provide FD/L as part of normal Start-up Mode, periodically during Normal Operations and Training Modes, and extensively, if selected, as part of Maintenance Mode. Testability shall be evaluated as an integral part of the TCS supportability assessment.*

## **3.11 ILS Management Requirements.**

ILS management requirements include LSA task reports, the LSAR, LSA output summary reports, and maintenance plans.

## **3.12 LSA Schedule.**

*The prime contractor shall analyze the LSA requirements and develop an implementation approach and schedule that coincides with the objectives of the TCS Program Master Milestone Schedule. Therefore, completion of required LSA tasks complement the scheduled accomplishment of related activities shown on the aforementioned master milestone schedule, e.g., Technical Manual and Training. Consequently, tasks are scheduled so that data produced by one task is available as input to other supporting tasks.*

- To construct the TCS LSA schedule, each assigned task and its applicable sub-tasks, will be carefully reviewed to determine the input required and how data output will be utilized.*

- Additionally, major tasks are scheduled as shown in Figure 3-2 and are to be completed in time to incorporate the results in the LSAR and make applicable data items available for assessment during scheduled program and LSA reviews, as required.*

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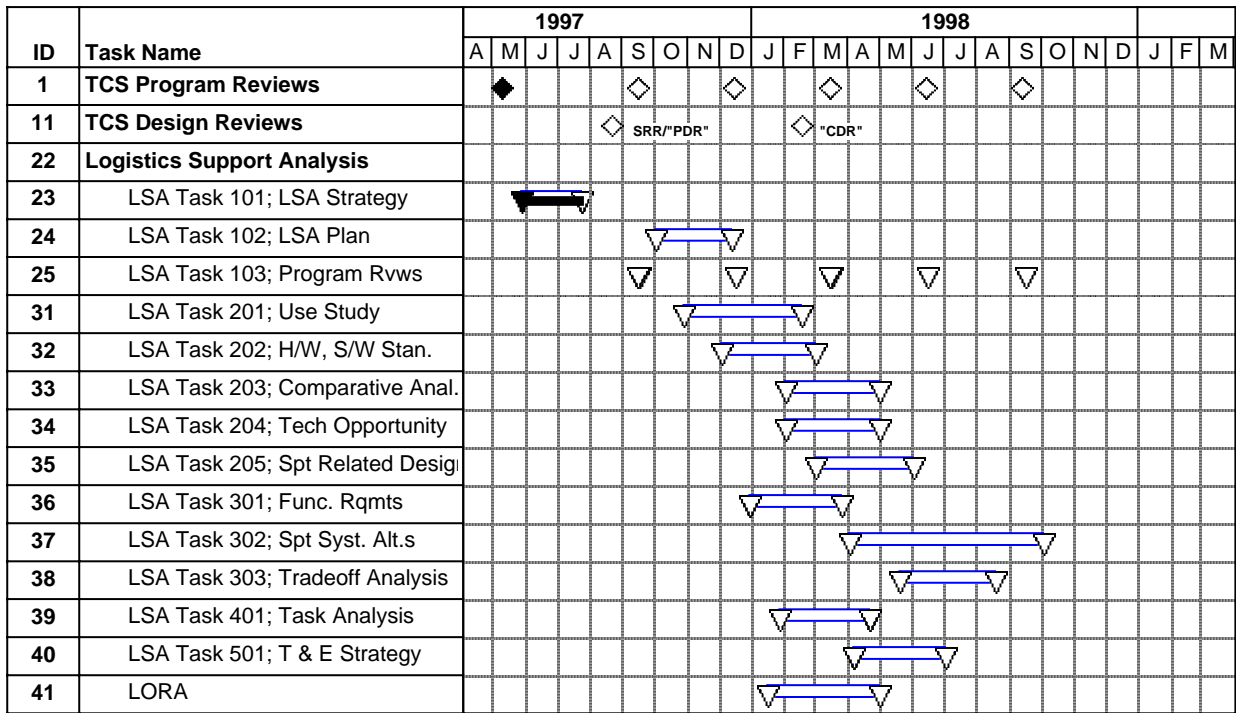


Figure 3-2. TCS LSA Task Activity Schedule

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## 4. MANPOWER, TRAINING, AND TRAINING, EQUIPMENT/TRAINERS

*DoD 5000.2-R states in paragraph 4.3.8, “A comprehensive management and technical strategy for human systems integration shall be initiated early in the acquisition process to ensure that: human performance; the burden the design imposes on manpower, personnel, and training (MPT); and safety and health aspects are considered throughout the system design and development processes.”*

This section outlines plans for providing manpower, personnel, trainers, training equipment, and data to support TCS during supportability T&E, and in the field. Personnel skills required to perform maintenance tasks, any training required for these tasks and manpower estimates by maintenance level will be defined. Similar manpower and training is planned for support equipment.

### 4.1 Objectives.

Planning outlined below is designed to develop government training capability that is based on the results of the LSA process described in section 3 of this JILSP; to support TCS and SE test and evaluation; to provide initial cadre and follow-on User training; and to develop required training equipment/trainers.

### 4.2 Manpower.

*The TCS operator(s) will be able to control and monitor multiple AV(s) simultaneously; format, send and receive tactical communication message; control and monitor multiple payloads simultaneously; view and exploit payload data from multiple payloads simultaneously; send and receive voice communications; and send and receive analog video and NITF 2.0 digital imagery, record and retrieve payload data, plan UAV missions, and monitor the health and status of the TCS system.*

*Operator, unit maintainer, and intermediate maintenance tasks identified in the LSA/LSAR process shall be addressed in the training documentation. Logistics specifications are further defined in the ILS Statement Of Work. Tasks will be evaluated based on operator skills and proficiencies. The initial TCS task analysis shall produce a system baseline which will be optimized by engineering analysis and operator evaluations.*

*All TCS users, operators, maintainers and other personnel having access to TCS shall be cleared to the highest sensitivity of the data that the TCS processes, stores and transfers.*

#### **4.2.1 Front End Analysis (FEA) and Joint Training Systems Plan (JTSP).**

*A FEA of the TCS shall be conducted by PMA205 as required by OPNAVINST 1500.XX. The analysis will be conducted and documented in accordance with the Training Planning Process Methodology (TRPPM) Guide and Manual. The resultant . Joint*

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*Training Systems Plan (JTSP) will be forwarded to the OPNAV Program Sponsor on TBD*

## **4.2.2 Manpower Constraints.**

The TCS manpower requirements shall not exceed the Service's guidelines for their respective UAV program.

## **4.2.3 Contractor Manpower Estimation Efforts.**

The contractor will develop operator and maintenance manpower and skill level estimates for the TCS, and SE using specified methodology. These estimates are to include scheduled and unscheduled maintenance man-hours per operating hour at organizational and intermediate maintenance levels, by work center, MOS/NEC, rank/ratings, and totals. The bases for these estimates are to be LSA, LSAR data, reliability and maintainability analysis, historical data for UAV GCSs and modeling.

## **4.3 TCS Training**

*In the Training Operations Mode the TCS shall support the following functions:*

- 1. Mission Planning*
- 2. Mission Control and Monitoring*
- 3. Payload Product Management*
- 4. Target Coordinate Development*
- 5. C4I Systems Interface*

*Functions under the Training Operations Mode shall operate concurrently without precluding or excluding any of the other functions, in accordance with allowable operations as determined by the appropriate levels of interaction.*

*The following TCS Training elements are required of the TCS Core Functionality CSCI:*

- Provides for Initial Training on all TCS Components as well as periodic recertification.*
- Provides for computer based training.*
- Training Evaluation Processing.*
- HCI Requirements*

### **4.3.1 TCS Training Objectives**

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*The purpose of the Training Mode is to provide the operator capability to train at any level of interaction regardless of the TCS hardware configuration. All of the following CSCIs shall be capable of executing concurrently.*

1. *TCS Core Functionality CSCI*
2. *TCS Mission Planner CSCI*
3. *C4I Interfaces CSCI*
4. *DII/COE CSCI*
5. *Operating System*

*TCS training and training support shall include the processes, procedures, techniques, training devices and equipment to train civilian, active duty and reserve military personnel to operate and support the TCS system.*

## **4.3.2 TCS Training Requirements**

*Specific TCS Core Functionality CSCI Training requirements include:*

1. *The training capability for performance of TCS functions shall include primary mission (flight route/payload) planning, mission control and monitoring, imagery processing, tactical communications, AV control communications and TCS system on-line diagnostics.*
2. *The TCS shall provide the functional capability to train personnel in the operation the TCS system, performance of TCS UAV functions, and on-line system troubleshooting.*
3. *TCS system training shall include system architecture, component familiarization, and system startup, initialization, system recovery, on-line diagnostics, and shutdown.*
4. *The training capability shall be alterable without affecting the configuration of the operational software.*
5. *A high resolution computer generated graphical use interface that enables the UAV operator who is trained on one UAV system to control different UAV platforms as well as payloads with minimal additional training.*
6. *Capability shall provide for the operator and maintainer, an embedded or add-on interactive training courseware with self-paced instruction, duplicating UAV flight performance characteristics, capabilities, and limitations. Interactive courseware training capability for TCS shall be developed during Phase I and shall be introduced to the user during scheduled demonstrations and tests.*
7. *Training capability shall be compatible with the U.S. Army Intelligence and Electronic Warfare Tactical Proficiency Trainer as an objective.*

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8. *Training capability shall not support formal training operations concurrent with the execution of an actual mission. The capability for processing actual communications concurrently with training operations shall be provided if and only if messages are identified as training messages.*
9. *Operator and maintainer actions shall be recorded for self assessment and performance enhancement.*
10. *Retrievable TCS/UAV parameters shall be recorded to measure operator and maintainer performance.*

A systems approach will be applied in the development and preparation of a training program that will provide designated operator and maintenance personnel with the necessary knowledge and skills to adequately support TCS and support equipment. The contractor will provide initial training to government testing personnel, instructor personnel, and the initial cadre of user and depot personnel. The training program will be designed and developed such that the program may be used to perform future training for TCS and SE personnel by the government.

## **4.3.3 Training Related Requirements**

*Formal training programs shall not be required for TCS Phase 1, Program definition and Risk Reduction. Trained and proficient personnel from the Original Equipment Manufacturers, (OEM) Government Engineering Teams, supporting Contractors, and Military Personnel will support the operation and maintenance of the demonstration system equipment throughout Phase 1.*

*TCS training and training support shall include the processes, procedures, techniques, training devices and equipment to train civilian, active duty and reserve military personnel to operate and support the TCS system. This will include: individual and crew training; new equipment training; initial, formal, and on-the-job training. TCS training will strike a balance between institutional, new equipment and unit training. ~~{SSS408}~~*

*-The TCS system shall provide, for the operator and maintainer, an embedded or add-on interactive training courseware with self-paced instruction, duplicating UAV flight performance characteristics, capabilities, and limitations.*

- *The interactive courseware training capability for TCS shall be developed during Phase I and introduced to the user during scheduled demonstrations and tests. ~~10~~*
- *The training capability for performance of TCS functions shall include primary mission (flight route/payload) planning, mission control and monitoring, imagery processing, tactical communications, AV control communications and TCS system on line diagnostics.*



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- *This capability will be qualified and improved during Phase I based upon use and feedback from qualified operators and users demonstrating TCS system equipment throughout Phase I.*
- *Instructional support materials and training courseware for classroom discussion and lecture will be developed to support institutional, new equipment training and unit training. ~~{SSS411}~~*
- *The TCS shall provide the functional capability to train in the operation of the TCS system, performance of TCS UAV functions, and on line system troubleshooting.*
- *TCS system training shall include system architecture, component familiarization, and system start up, initialization, system recovery and shutdown.*
- *TCS training devices shall be required for the institutional training base.*
- ~~□ *Additional TCSs shall be required to support the Joint DoD UAV Training Center. ~~{SSS415}~~*~~
- *The TCS system shall not support formal Training operations concurrent with the execution of an actual mission.*
- *The capability for the conduct of actual communications processing concurrently with Training operations shall be provided if and only if messages are identified as training messages. ~~{SSS41}~~*
- *Training shall be adequate to maintain operator and maintainer skills and proficiencies.*
- *TCS shall record operator and maintainer actions for self assessment and performance enhancement.*

## 4.3.4 Training Materials.

Training materials will be prepared to support the training program and will be suitable for use by the government to conduct any future TCS and SE training.. The curricula materials may be prepared in the format required by MIL-PRF-29612 and related DIDs approved for use in RFPs and Government contracts on 26 September 1996. Specific training materials will include:

- An instructional systems development (ISD) approach to training will be used to develop the training program and training materials.
- The ISD approach to training proceeds from an analysis of job task inventories to a selection of tasks for which training is required, identification of skills and knowledge required to accomplish those tasks, development of training objectives, design and development of training materials, conduct of courses, and evaluation of courses and course materials.

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## **4.3.5 Technical Documentation.**

LSA output data, technical manuals, and other formal documentation will be the prime sources of information used for the development of training programs and training materials. Data will be maintained in the LSAR data base that will be capable of producing output reports required by MIL-PRF-29612 and related DIDs. (See section 1.11.1.)

*All TCS Operator Manuals and Technical Manuals shall be verified and validated prior to initial operational test.*

## **4.3.6 Training Conference.**

A training post-contract award conference will be scheduled within 30 working days of Engineering and Manufacturing Development (E&MD) contract award, and not more than 2 in-process review conferences during E&MD will be scheduled. The initial training conference will be held during the first E&MD IPT meeting, and in-process review conferences will be scheduled with subsequent IPT meetings.

## **4.3.7 Training Systems and Manpower Analysis and Management.**

The optimum personnel and training program necessary to satisfy operation, maintenance, and support requirements of TCS, SE, and training equipment will be determined and recommended. Data developed by LSA, maintenance plans, and human engineering design efforts will be used. Training will be conducted in harmony with the master site/ unit activation schedule, approved TCS, SE maintenance plans, the TEMP, and the JTSP.

## **4.3.8 Training Development.**

TCS and SE operations and maintenance training courses will be established and conducted.

### **4.3.8.1 Training Material Development.**

Training courses materials required to support government organic training will be developed in consonance with TCS and support equipment maintenance plans. Training course materials will be required for these courses:

- TCS Operator
- TCS Maintenance
- Trainer Operator
- Trainer maintenance

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*TCS Operator training is envisioned as being of two different types since the TCS will not function as a UAV control station until integrated into a host UAV system. The first course would be a generic operator course to familiarize the student with the TCS controls and indicators. The second course would be a host UAV specific delta course designed to teach the differences in the host UAV operational procedures. A separate course will be required for each host UAV system. Courses will be developed as stand alone courses suitable for integration into host UAV training courses by the host UAV Program Manager.*

*The TCS maintenance training courses are envisioned as generic for all TCS's. With maintenance training courses developed for each level of maintenance. Host UAV system maintenance procedures requiring modification as a result of TCS integration will be the responsibility of the host UAV Program Manager.*

## **4.3.8.2 Training Presentation.**

Training Courses will be conducted for TECHEVAL, OPEVAL, initial cadre training personnel, and government instructors (to establish organic government follow-on training capability) contractor as indicated below:

*The Training location for TCS/TUAV will be Fort Huachuca, Arizona. Predator Training location and designated depot sites for training are located in Indian Springs Nevada.*

*Operator training courses are envisioned for each host UAV system and will require expansion of the courses currently shown.*

## **4.4 Training Equipment/Trainers.**

Training equipment/trainers will be capable of supporting instruction for O, I, and D level operations and maintenance applicable to TCS and SE.

### **4.4.1 Trainer Detail Specification Development.**

For each maintenance trainer identified in the training program development and management plan, a system design specification will be prepared that is suitable for use as a procurement specification, with matching ILS detail specifications.

#### **TCS Training Courses**

<u>Course Title</u>	<u>Date</u>	<u>Location</u>
TCS OPEVAL/TECHEVAL Operator	<b>TBD</b>	<b>TBD</b>
TCS OPEVAL/TECHEVAL Maintenance	<b>TBD</b>	<b>TBD</b>

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TCS Operator	TBD	TBD
TCS Maintenance	TBD	TBD
TCS Depot Maintenance	TBD	TBD
Trainer Operator	TBD	TBD
Trainer Maintenance	TBD	TBD

## 4.4.2 Maintenance Trainers/Design

*The contractor will furnish maintenance training equipment required to provide necessary and practical experience in the maintenance of TCS and SE.*

Trainers will be designed to represent consideration of all factors that facilitate learning and influence transfer of training. To the extent feasible, this will include near-exact representation of system maintenance tasks derived from the TCS LSA, operating conditions, emergency procedures, the widest range of task simulations and performance requirements, representation of realistic cues required for early detection of impending malfunctions, and elimination of irrelevant cues.

### 4.4.2.1 Training Equipment/Trainer Logistic Support.

All logistic support requirements for training equipment/trainers will be developed by the LM for training systems in accordance with the ILS Process Specification, Logistics Integration/Management, AL-082AA-LSP-080.

## 4.5 Training and the Human Computer Interface (HCI)

*Critical Training Issues:*

- *Proficiency Training*
- *Emergency Procedures Training*
- *Use of simulation training and use of the TCS as a simulator*

*The TCS HCI shall provide unambiguous AV and payload control and status feedback indicators to ensure safe, efficient operations of two AVs and their payloads by a single TCS station.*

- *The TCS shall provide for a specific icon shape on a constant contrast background, or other visual information coding mechanisms, to cue the TCS operator regarding*

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which UAVs are under his or her primary control.

- The TCS HCI shall provide the capability to select and amplify an object or point on a map or payload screen.
- The TCS HCI shall provide coarse and fine payload control capabilities directly on the payload screen.
- The TCS HCI shall display the SAR imaging swath on the map display. The TCS HCI shall provide the on-screen capability to select and efficiently move or reorient a previously defined SAR imaging swath.
- The TCS HCI shall provide the capability to lock onto and hold a coordinate point on-screen.
- The TCS HCI shall provide the capability to display operator definable “Lock Out” zones around waypoints, LRP, or any selected point on the AV flight path.
- The TCS shall provide the capability to display operator definable “Lock Out” zones around waypoints, LRP, or any selected point on the AV flight path.
- The TCS HCI shall provide for a rapid means to cancel aural warnings.
- The TCS HCI shall provide for separation, grouping, and visual coding of multiple categories of alerts, to include Warnings, Cautions, and Advisories.
- The TCS HCI shall provide for visual Warnings, Cautions, and Advisories to be displayed at or near the center of the field of view, i.e., within a 30° cone, of all monitors in a TCS system.
- For AV safety or mission-critical Warnings, the TCS HCI shall provide a default selection as well as an override option, along with a selection of adaptive responses, and the minimum information necessary to assist the operator in responding quickly and adaptively to the emergency.
- The TCS HCI shall provide for on-screen information to include, as a minimum, overlays, headers, cursors, alphanumeric annotation, waypoints, crosshairs, designed to be visible against the complete spectrum of map and payload video backgrounds.
- The TCS HCI shall provide continuously-available, on-screen control functions for time and mission-critical operations, to include as a minimum print, freeze, declassification, mark VCR, de-clutter, cease RF transmission.
- The TCS HCI shall provide for the capability to automatically overlay designated target transmissions from the payload screen onto the map screen.
- *Operator and maintainer performance shall be measurable using parameters*

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retrievable from the TCS to determine proficiency levels.

## 4.6 Fault Detection/Location Function

Fault Detection/Location (FD/L) to the Line Replaceable Unit (LRU) level shall be provided to indicate the readiness status of TCS.

As a minimum, TCS shall provide FD/L as part of normal Start-up Mode, periodically during Normal Operations and Training Modes, and extensively, if selected, as part of Maintenance Mode.

The TCS shall allow the operator to control and monitor the AV's FD/L\_Payload's FD/L and Data link FD/L. ~~SSS204~~

### 4.6.1 Start-Up FD/L

Start-up FD/L in the TCS shall fault detect TBD% of all mission critical failures with a false alarm rate not to exceed TBD%.

- Start-up FD/L shall isolate TBD% of all detected mission critical failures to a single LRU.
- The remaining mission critical failures detected but not isolated by Start-up FD/L shall be isolated using manual isolation procedures and technical data provided to the operator by the TCS.
- Likewise, Start-up FD/L in the TCS shall fault detect TBD% of all non-mission critical failures with a false alarm rate not to exceed TBD%.
- Start-up FD/L shall isolate TBD% of all detected non-mission critical failures to a single LRU.
- The remaining non-mission critical failures detected but not isolated by Start-up FD/L shall be isolated using manual isolation procedures and technical data provided to the Operator(s) by the TCS.

### 4.6.2 Periodic FD/L

Periodic FD/L in the TCS shall fault detect TBD% of all mission critical failures with a false alarm rate not to exceed TBD%.

- Periodic FD/L shall isolate TBD% of all detected mission critical failures to a single LRU.
- The remaining mission critical failures detected but not isolated by Periodic FD/L

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*shall be isolated using manual isolation procedures and technical data provided to the operator by the TCS.*

- *Likewise, Periodic FD/L in the TCS shall fault detect TBD% of all non-mission critical failures with a false alarm rate not to exceed TBD%. Periodic FD/L shall isolate TBD% of all detected non-mission critical failures to a single LRU. ~~{SSS214}~~*
- *The remaining non-mission critical failures detected but not isolated by Periodic FD/L shall be isolated using manual isolation procedures and technical data provided to the Operator(s) by the TCS.*
- *Periodic FD/L shall never take longer than TBD minutes to execute \_and shall continuously operate in the background while the system is in the Operations state. ~~{SSS216}~~*

## **4.6.3 Extensive FD/L**

*Extensive FD/L in the TCS shall fault detect TBD% of all mission critical failures with a false alarm rate not to exceed TBD%.*

- *Extensive FD/L shall isolate TBD% of all detected mission critical failures to a single LRU. ~~18~~*
- *The remaining mission critical failures detected but not isolated by Extensive FD/L shall be isolated using manual isolation procedures and technical data provided to the operator by the TCS.*
- *Likewise, Extensive FD/L in the TCS shall fault detect TBD% of all non-mission critical failures with a false alarm rate not to exceed TBD%.*
- *Extensive FD/L shall isolate TBD% of all detected non-mission critical failures to a single LRU.*
- *The remaining non-mission critical failures detected but not isolated by Extensive FD/L shall be isolated using manual isolation procedures and technical data provided to the Operator(s) by the TCS.*
- *Extensive FD/L shall allow the Operator(s) to select specific tests or all test for execution.*
- *Extensive FD/L shall inform the Operator(s) how long a specific test will take and periodically, at least once every TBD seconds, delineate the estimated time till completion.*

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## **4.7 ILS Management Requirements.**

ILS management requirements include the training program development and management plan, training task analysis report, control documents, lesson plans, trainer proposals and specifications, trainee guides, course materials, and test packages.

## **4.8 Schedule.**

**TBD**



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## 5. TECHNICAL DATA

This section describes requirements for the development, production, and delivery of technical data (TD) including technical manuals (TMs) for TCS and support equipment.

### 5.1 Technical Data Management Plan (TDMP).

PMA-205 will develop a TDMP in accordance with SECNAVINST 4210.9. In this plan, the Technical Data Management Officer (TDMO) will be designated as AIR-4.1.9. The level of engineering drawings to be provided is level 3, Product Drawings and Associated Lists. Contract data requirements list (CDRL) items, data item descriptions, military standards and specifications, and statement of work references that require delivery of the technical data are identified in the TDMP for the following categories.

- Engineering drawings and associated lists.
- Specifications and standards.
- Process sheets.
- Quality assurance documentation.
- Test documentation.
- RAM documentation.
- Software documentation.
- Hardware and software integration documentation.
- Special test and support equipment documentation.
- Test site and facility documentation.
- CAD/CAM/CAE documentation.
- System safety documentation.
- Design for Maintainer (DFM)

Government data rights will be identified and addressed in the TDMP, and contractual documentation will be developed. A data guidance conference will be required. The ILSM and TD LM will participate in the data guidance conference. The requiring activity for technical data above is PEO(CU)-PM TS. Contractor certification of technical data is required. Contract requirements for “Certification of Technical Data Conformity” will be developed. Plans and procedures for incorporation of approved ECPs into baseline program will be developed. Data warranty requirements will be developed. Data validation requirements will be developed.

### 5.2 Technical Manual Requirements.

The following technical manuals will be developed for TCS and support equipment to support government test and evaluation including supportability T&E, training, and production, in accordance with the technical manual contractual requirement (TMCR).

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- Operation and maintenance manuals with illustrated parts breakdown.
- Maintenance requirements cards (MRCs).

## **5.3 TM Development Process Summary**

**TBD**

### **5.3.1 Technical Manual Management Team (TMMT).**

The technical manual management team (TMMT) members are listed in Table 5-1.

### **5.3.2 Technical Manual Schedule.**

The development and production schedules for TMs will satisfy requirements of the supportability T&E schedule, the training schedule, the site/unit activation schedule, the TCS production schedule, and the interim support schedule. Basic, digital format TMs will be developed that will be used during supportability T&E and initial cadre training. These manuals will be updated, verified, and used during formal pipeline training. Technical manuals are required for production TCS and support equipment.

### **5.3.3 TM Selection Conference.**

Proposed TM coverage for TCS and support equipment will be presented at the TM selection conference. TM coverage will be evaluated and determined by the government. The TM selection conference will be held in conjunction with the first IPT meeting.

### **5.3.4 TM Format.**

Technical manuals will be developed in digital format suitable for display on equipment with hard copy print-out capability. The format shall be JCALS compatible. Interactive Electronic Technical Manuals (IETMs) system software troubleshooting and maintenance aids, and maintainer-mounted electronic maintenance manuals should be considered.

## **5.4 Technical Manual Coverage.**

The government and the systems integration contractor will define the scope of technical manual coverage. The contractor will recommend specific manuals to be produced, using LSAR and maintenance planning data, top assembly drawings, and TCS and support equipment work breakdown structures; and perform analysis on coverage of existing government publications.

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**Table 5-1**

## **TMMT Members**

<b>NAME</b>	<b>CODE</b>	<b>ORGANIZATION</b>	<b>FUNCTION</b>	<b>TELEPHONE</b>
Capt.Mike Witte, USN	PEO(CU)-PM TS	UAV JPO	TCS Program Mgr.	(301)757-5879
Lisa Coluzzi		UAV JPO	TCS Engineering	(301)757-5881
		UAV JPO	TCS ILS Manager	
	AIR 205-5E	NAVAIR	Training	
	AIR 3.1.3.1	NAVAIR	TCS APML	
	AIR 4.1.9	NAVAIR	TCS Manufacturing & QA	
	AIR 3.1.3.1	NAVAIR	Supply	
		NAWC-AD(W)	Engineer	
		NAWC-AD(PR)	Engineer	
		NAWC -AD(L)	Engineer	
		NAWC-AD(I)	Engineer	
	SFAE-UAV-LO	USA MICOM	LOG Chief	
	SFAE-UAV-LO	USA MICOM	TUAV/TCS Logistics	
			Predator/TCS Logistics	
	ASL-34	MCUAV	USMC UAV Logistics	
Mr. Bill Sams	Contractor	Battlespace	TCS Training Support	(619) 549-4532
Mr. Tim Piester	Contractor	EG&G	UAV Support	(504) 663-9310
Mr. Jon Ault	Contractor	NSM Corporation	UAV Support	(301) 737-1661
Mr. Ron Luzier	Contractor	NSM Corporation	UAV Support	(302) 737-1661

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## **5.5 Technical Content.**

Technical content of the TMs is to be traceable to data developed by the LSA process, the decisions reflected in maintenance plans, and other logistic element decisions.

### **5.5.1 Traceability of Conditions.**

Specific quantitative parameters, values, and qualitative attributes (such as TCS or support equipment condition to be measured, observed, maintained or established) that are described in technical manuals are to be derived from and be traceable to related parameters and values documented during the engineering design process or to logistic engineering data developed by the LSA. Particular attention will be paid to the following types of source data in the LSAR:

- Operational and maintenance requirements
- Item reliability and maintainability characteristics
- Task analysis
- Support equipment description and justification
- Spares and repair parts requirements

### **5.5.2 Technical Manual Requirements Analysis.**

An analysis will be performed on overall technical manual requirements for TCS, GFE, CFE, and support equipment, and on requirements for update of the general series manuals for cleaning, preservation, corrosion control, craft skill, repair, and non-destructive testing techniques.

- The analysis will be accomplished in terms of the overall hardware breakdown and maintenance functions to be performed at each level of maintenance.
- The results of this analysis will be made available for use at the TM selection conference and will be updated periodically, as required, to incorporate new and revised requirements.
- The requirements analysis will be documented and made available for TMMT review.

## **5.6 Quality Assurance (QA).**

A TM quality assurance function will be established in accordance with MIL-M-85337(AS).

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## **5.6.1 In-Process Reviews.**

The government will conduct TM in-process reviews at specified TM completion milestones. The purpose of these reviews is to review contractual requirements, and detect deficiencies at the earliest possible stage of TM development when changes are most feasible and economical.

## **5.6.2 TM Validation.**

TMs will be validated in accordance with MIL-M-85337(AS), using the production TCS and support equipment. Validation is required to ensure that accurate and adequate information is provided in consonance with the approved LSAR, engineering drawings, engineering orders, design change notices, supply item change requirements, test reports, provisioning parts breakdowns, and the actual hardware configuration. It will be the contractor's responsibility to obtain all support equipment, consumable items, government furnished equipment, and any materials that will be required to support the validation effort.

## **5.6.3 TM Verification.**

Government verification of production TMs will be conducted following delivery of the validated basic TMs to the government. Verification is scheduled to start six months after validated TMs are received. The contractor will be required to support TM verification.

## **5.7 Validation of GFE Organizational Level Source Data.**

The contractor will validate GFE source data as it is incorporated into TMs. If source data are in error, the contractor will make the necessary corrections and report results to the ILSM or his representative.

## **5.8 TM Changes/Revisions.**

Updating of technical manuals will be an iterative process. Source material for changes and revisions will include LSAR and engineering data. Technical publications deficiency reports (TPDRs) will be received from operational units and obtained during TM validation.

- The primary objective is to provide technical manuals that reflect the latest hardware configuration and government operational and maintenance experience.
- Changes or revisions to technical manuals will be made as required to expand or improve coverage resulting from engineering design changes and modifications, contractor validation of operational and maintenance procedures, TPDRs received

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from factory training and during testing, formal verification, and from recommendations received from government personnel. (See also section 12.)

## **5.9 ILS Management Requirements.**

ILS management requirements include status reports, SE illustrations, technical manual data cards, QA program plan, TM in-process review meeting results, TM validation plan, TMs, and TM revisions.

## **5.10 Schedule.**

**TBD**

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## 6. SUPPORT EQUIPMENT

This section of the JILSP provides the plan for TCS support equipment (SE) identification, selection, development, testing, delivery, and logistic support.

### 6.1 Objectives.

Objectives of this plan are to:

- Perform TCS supportability and testability analysis.
- Eliminate, reduce, and simplify SE requirements.
- Identify, develop, test, and deliver essential, required SE and its logistic support in time for supportability T&E and initial cadre training.
- Provide production SE and its logistic support for training, organizational, intermediate, depot, and all other sites.
- Provide necessary SE interim support until government support capability is phased in prior to material support date (MSD).

### 6.2 SE Identification, Selection, Development, Testing, and Delivery.

#### 6.2.1 Identification.

Analysis will be performed to identify requirements for support equipment, based on the outputs of (1) SE related TCS supportability analysis; (2) TCS testability analysis; (3) TCS design tradeoffs; and (4) the LSA process that results in maintenance plans which specify SE requirements. Proposed SE items will be listed on the SE candidate list (SECL).

*To the maximum extent possible, general purpose test equipment (GPTE) and common tools resident in each service shall be used to perform all corrective and preventative maintenance at all authorized levels of maintenance.*

*Tools and test equipment required to maintain the TCS but not resident in each service inventory shall be identified as special tools and special purpose test equipment (SPTE), respectively, and kept to a minimum.*

*The TCS shall adhere to DoD regulations and policy governing military standards for logistics, tools, and Test, Measurement, and Diagnostic Equipment (TMDE). Early identification of SE required for supportability T&E may be necessary, and some SE items may fall into the long lead time category. Items so identified prior to verification through the LSA process may be proposed by use of an early support equipment*

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*recommendation data (SERD). When the TCS maintenance plans are available, these SERDs will be reevaluated, revised, and resubmitted.*

## **6.2.2 Selection.**

The definition of SE contained in OPNAVINST 4790.2F is applicable. Requirements for SE will be eliminated, reduced, and simplified through the supportability analysis process that is specified. The need for peculiar support equipment to support TCS will be minimized, consistent with selection criteria that are specified below. In selecting support equipment to recommend to the government, the contractor will request from the government the technical information necessary to determine whether an SE functional requirement can be fulfilled by an item already in the government's inventory.

### **6.2.2.1 Selection Criteria.**

The following order of priority will be used in selection of SE to be recommended:

- a. Standard, preferred DoD SE. (See MIL-HDBK-300M.)
- b. Standard, preferred Navy aeronautical SE (e.g., CASS). (See NAVAIR 16-1-525 and NAVAIR 19-1-127.)
- c. Items in the government inventory or being developed under government contract.
- d. Commercially available items that meet all technical requirements (design and logistic).
- e. Modification of any of the above.
- f. Newly developed items that meet all technical requirements.

Source of data concerning standard, preferred, and existing SE, and procedures for accessing these data, are contained in MIL-STD-2097A.

### **6.2.3 Recommendation.**

The SERD (see section 3.7, LSA-070) will be the principal recommendation and approval (or acceptance) mechanism for all SE required to support TCS. SERDs will be prepared and submitted for government approved (or accepted) SE items on the SECL. Government decisions concerning each item of SE recommended will be shown on the approved (or accepted) SERD. SERDs will be prepared and delivered in digital format (see section 1.11.1).



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## **6.2.4 Government Approval.**

For provisioned SE contract line items, no manufacturing or logistic support efforts will commence until the government approved SERD has been incorporated into the contract and funding has been provided. For fixed-price SE contract line items, only government acceptance of the SERD is required. Visibility of SERDs shall be such that government changes and approvals may be viewed without loss of original documentation.

## **6.2.5 Development.**

SE will be developed as specified on the individual SERD, in time to meet the TCS T&E schedule, supportability T&E schedule, training schedules, and production site/unit activation schedules.

## **6.2.6 Testing.**

SE will be tested by the contractor and government during TCS supportability T&E (including TECHEVAL and OPEVAL) and as specified on the individual SERD.

## **6.2.7 Delivery.**

SE will be delivered in time to meet TCS T&E schedules, TCS supportability T&E schedules (including TECHEVAL and OPEVAL), training schedules, and production site/unit activation schedules. Special emphasis will be placed on training site requirements and need dates.

## **6.2.8 Consolidated SE List.**

The consolidated SE list (CSEL) will be provided and periodically updated by the contractor. The initial CSEL will be in digital format and be forwarded within 30 days of submission of 10 or more SERDs. The CSEL will reflect all the SE items selected, as well as those not selected, with reasons for non-selection. At 60 day intervals thereafter, revised CSEL pages reflecting changes will be provided in digital format.

## **6.2.9 Support Equipment Illustrations.**

Support equipment illustrations will be prepared as indicated in section 5.

## **6.3 SE Logistic Support.**

Each recommended SE item is analyzed in terms of required logistic support. Logistic support requirements are recommended to the government. The same SERD used to identify SE hardware and software requirements is then used to document

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recommended logistic support for the item. Government approval (or acceptance) of SERDs is as indicated in paragraph 6.2.4, above.

## **6.3.1 ILS Management Support.**

Support to be provided may include ILS management for support equipment, IPT meetings and related support, ISP subsection review and development, and deliverables including SE item Interim Support Plans (ISP)s and Phased Support Plans (PSP)s. Requirements for support and deliverables must be as indicated on the approved (or accepted) SE item SERD.

## **6.3.2 Detailed ILS Requirements.**

Detailed logistic support requirements for SE items are recommended by entry of codes in specified blocks of the SERD. Upon SERD approval (or acceptance), data are provided as indicated below. Prototype logistic elements specified below are delivered with or prior to the SE item, in time for TCS supportability T&E (including TECHEVAL and OPEVAL). Production logistics elements are to be delivered prior to or with the SE items. In no case is an SE item to be delivered without logistic support.

### **6.3.2.1 LSA/Maintenance Plan.**

The contractor is to recommend LSA candidates, types of LSAs, and provide SE LSAR data and maintenance plans as indicated in section 3.

### **6.3.2.2 Training.**

The contractor is to recommend training specifics on the SERD. The contractor must develop data and provide training for SE in accordance with section 4.

### **6.3.2.3 Supply Support.**

The contractor is to recommend supply support requirements on the SERD. The contractor must provide supply support as indicated in section 7.

### **6.3.2.4 Technical Manuals.**

The contractor is to recommend the types of technical manuals, including maintenance requirements cards (MRCs), on the SERD. The contractor must provide technical manuals and the MRCs in accordance with section 5.

### **6.3.2.5 Interim Support.**

If the SE item is repairable, complex, and requires extensive logistic support, the contractor is to recommend the type and extent of interim support including repair of

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repairables (ROR) on the SERD. Interim support must be provided in accordance with section 9, as tailored by approved (or accepted) SERD requirements.

## **6.3.2.6 Depot Requirements.**

The contractor is to recommend depot support requirements on the SERD. The contractor must then provide rework standards and component pilot rework/repair (CPR/R) packages and data.

## **6.3.2.7 ECP ILS Support.**

Engineering change proposal (ECP) ILS support must be provided as indicated in section 12.

## **6.3.2.8 Allowances.**

TCS support equipment items are to be listed by the government in the support equipment resources management information system (SERMIS), and later in Individual Material Readiness Lists (IMRLs), in accordance with NAVAIRINST 13650.1B. Test program sets (TPSs) must be identified in the NAVAIR 00-35QV-1/2 and tailored outfitting lists (TOLs), in accordance with NAVAIRINST 13630.1. (TOLs are to contain authorized allowances of unit under test (UUT) TPS elements.)

## **6.3.2.9 Supportability T&E.**

Support equipment items including TPSs and ancillary equipment are to be provided and used during TCS supportability T&E (including TECHEVAL and OPEVAL). These items are to be evaluated as part of the ILS evaluation process. All prototype logistic support for these SE items is to be provided by the contractor and will be evaluated by the government during Supportability T&E. (See section 10.)

## **6.4 ILS Management Requirements.**

ILS management requirements include the SECL, SERDs, CSEL, support equipment hardware and software, ISPs, PSPs, and ILS support (all logistic elements) for these SE items and all related data.

## **6.5 Schedule.**

**TBD**

## **7. SUPPLY SUPPORT**

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This section describes the plan for providing supply support for TCS and its support equipment, in harmony with the TCS interim support plan and the individual site/unit activation phased support plans. Acquisition and management of spares and repair parts required during the interim support period are addressed in section 9. All provisioning documentation will be based on government-approved LSA outputs including approved maintenance plans.

*Specific supply support information required to determine initial requirement and cataloging of support item to be procured through the provisioning process includes:*

- *identification of the system configuration breakdown,*
- *design change information, maintenance coding*
- *overhaul rates, maintenance replacement factors and associated technical manuals.*
- *other key supply support information such as long lead items, tolls, and test equipment.*

## **7.1 Objectives.**

Objectives of this supply support plan are to:

- Develop provisioning documentation based on approved maintenance plans for TCS and support equipment.
- Manufacture and deliver spares and repair parts in time to meet TCS and SE training schedules, and site/unit activation schedules.
- Continue full supply support thereafter until TCS and SE retirement and disposal.

## **7.2 Interim Contractor Supply Support (ICSS).**

The systems integration contractor will provide interim contractor supply support (ICSS) during the interim supply period as indicated in section 9. Interim contractor supply support will be managed by the government supply support manager, AIR-3.1.3, and the contractor until material support date (MSD). Interim supply support will be provided by the contractor during TCS T&E and supportability T&E , and for initial training and user sites that are to be activated prior to MSD. All spares and repair part assets will be transitioned to government cognizance at the end of the interim support period. (See section 9.)

## **7.3 Government Supply Support.**

Government supply support (supply support following MSD) will be managed by the Naval Inventory Control Point (NAVICP) formerly Aviation Supply Office (ASO). All planning contained in the following sections is intended to ensure that TCS and SE spares and repair parts are identified, selected, ordered, delivered, and stocked at government supply facilities in time to meet the scheduled MSD.

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## **7.3.1 Designated Program Support Inventory Control Point (PSICP).**

The NAVICP has been designated program support inventory control point (PSICP) for TCS and related SE. The NAVICP will prepare budgetary estimates for the initial procurement of government spares and repair parts. These data will be provided to the NAVAIR supply support manager (AIR-3.1.3). Actual procurement of government spares and repair parts will be initiated in accordance with the supply support management plan (SSMP) milestones, after provisioning (item selection). The contractor for LSA will furnish NAVICP spares and repair parts usage data, and data on supply material list (SML) assets previously procured. A long lead time items list will be provided by the contractor to the NAVICP.

## **7.3.2 Provisioning Requirements Statement (PRS).**

A provisioning requirements statement (PRS) that defines required provisioning documentation and services requirements shall be prepared by the PSICP. Additional information shall be provided , as required, in the form of a PRS update.

## **7.3.3 Supply Support Management Plan (SSMP).**

The PSICP will prepare and provide to the NAVAIR supply support manager, AIR-3.1.3, a supply support management plan (SSMP). This SSMP will be delivered in consonance with the Appendix A SSMP delivery milestone. SSMP internal milestones will be in consonance with maintenance plan delivery dates and related Appendix A milestones. After approval of the SSMP by the supply support manager, the PSICP will provide status reports as requested.

## **7.3.4 Vendor Control.**

Contractual arrangements between the prime contractor and vendors will include provisions for the data required for item selection and provisioning of spares and repair parts.

## **7.3.5 Provisioning Conferences.**

User participation will be required during the provisioning conferences. Initial provisioning conferences are as scheduled in the PRS. As the PRS is modified to include all provisioning conferences, the supply support LM will provide dates, purpose, and intent of each conference in this section of the JILSP.

## **7.3.6 Provisioning Documentation.**

All provisioning data are to be based on government-approved failure rate data and on source, maintenance, and recoverability (SM&R) codes and technical factors

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contained in government-approved maintenance plans. Provisioning documentation for TCS and support equipment will include:

- Provisioning screening data
- Long lead time items list
- Statement of prior submission
- Common and bulk items list (not required for SE)
- Provisioning parts list
- Repairable items list
- Supplementary provisioning technical documentation
- Post conference list
- Provisioning parts list index
- Potential candidate break out list

## **7.3.7 Design Change Notices (DCNs).**

Design change notices will be submitted not later than 60 days after approval of each engineering change of TCS or SE item that modifies, adds, deletes, or supersedes spares or repair parts. Design change notices will be provided as part of engineering change efforts and costs therefore.

## **7.3.8 Delivery Delinquency Reports.**

Monthly spares and repair parts delinquency reports will be prepared by the contractor when spares and repair parts for TCS and SE (including GFE) are delinquent or anticipated to become delinquent during the next month.

## **7.4 Spares Acquisition Integrated with Production (SAIP).**

The government and contractor will employ the concept of concurrent release of spares orders with identical parts as installments on the production TCS and SE.

- For production, the contractor will update the procurement schedule and the list of recommended SAIP items.
- No later than 60 days before the contractor's order need date, the contractor will be prepared to provide the requiring activity with provisioning data required to quantify those items selected by the government to be procured under SAIP.
- The procurement schedule will address those candidate SAIP items that will be provided for the full-rate production contract(s).
- The contractor will accept orders for and integrate spares quantities into a production run with installation quantities.

## **7.5 Contractor Integrated Technical Information Services (CITIS).**

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CITIS is a computer-based service that draws upon integrated technical information from throughout a contractor's enterprise to support the product development process. Instead of program and product documentation (typically paper deliverables) being prepared and sent, program and product information may be viewed and manipulated at workstations across a network that includes most Government data users.

- CITIS provides a single entry point for authorized government access to contractor-maintained weapon system technical data.
- CITIS should provide remote access data services to the Acquisition Manager and Government technical, business and logistic activities responsible for review and approval of data. CITIS services should also provide access to and management of technical information.
- CITIS may include communication via electronic mail. To the maximum extent possible CITIS will be utilized with the TCS program.

## **7.6 Technical Data Identification Checklist.**

A technical data identification checklist will be provided. The checklist will list data needed to acquire selected parts for CFE.

## **7.7 ILS Management Requirements.**

ILS management requirements include provisioning documentation, government supply support, design change notices, delivery delinquency reports, SAIP data, technical data, and readiness-based sparing data.

## **7.8 Schedule.**

**TBD**

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## 8. FACILITIES

This section presents the TCS facilities plan. All facilities planning data are to be based on the general requirements provided as a result of the logistic support analysis and other facilities documentation developed as outlined below.

*The facilities plan will identify the facilities required to maintain, operate, and test the TCS systems and train personnel regarding operations, maintenance and repair.*

### 8.1 Objectives.

Objectives of facilities planning are to:

- Develop the facilities requirements document.
- Perform site surveys.
- Provide for installation services.
- Install TCS SE/trainers at T&E, training, operational, and depot sites.

### 8.2 Installation Data.

TCS installation data will be developed for shore-based and ship-based sites.

### 8.3 Support Basis.

*After emplacement at the operational site, the TCS shall be capable of planning, and conducting a mission within 1 hour of tasking. Required activities include 1) mission planning of a minimum 1 way-point mission, 2) preparing 2 AVs for flight, 3) data-link terminal set-up, 4) safety equipment installed, and 5) a single AV launched.*

Support data provided for facilities and installations are to be based on and traceable to the data provided by the LSA, and in consonance with data developed in accordance with the requirements of sections 4, 6, 13, 14, and 16.

#### 8.3.1 Facilities Requirements Document.

The facilities requirements document (FRD) will be developed that defines all TCS installation requirements that are to be imposed on any given facility. The data contained in this document will be applicable to typical shore-based, shipboard, and mobile facility sites.



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The facilities requirements document will be provided to all test and evaluation, training, Services, Marine Corps, and other shore sites scheduled to operate the TCS and SE/trainers. It will be used as a master reference document for facility planning.

Installation control drawings will be included that define basic and peculiar installation requirements applicable to typical TCS shore-based, shipboard, and mobile facility sites. These drawings will be updated as new requirements occur.

## **8.3.2 Site Evaluations/Surveys.**

### **8.3.2.1 Initial Site Evaluations.**

Approximately six months after award of the Engineering and Manufacturing Development (E&MD) contract, the government will begin performing shore and ship site surveys. Initially, the government will conduct site surveys at one of each of the following types of sites:

- Shore site
- Shipboard site
- Training site
- Mobile facilities site
- Depot level facilities site

*It is recommended that at a minimum, each of the possible training sites be included for a site survey. The number of training sites will be determined by the number of host UAV systems and the designated training site of each.*

These initial on-site evaluations will determine the degree of compatibility between the TCS and SE and existing facilities. To provide for cost effective site evaluations, when feasible, site evaluations of those sites within a geographical area will be performed concurrently.

*The systems integration contractor will support the UAV system Prime Contractor and NAVSEA in the ship check and design effort by developing generic installation requirements, including equipment and services interrelationships.*

### **8.3.2.2 Intermediate Site Evaluations.**

Following release of each site/unit activation plan, and prior to delivery of TCS, SE, and logistic support, an intermediate on-site evaluation will be conducted by the government approximately three months prior to site activation. The purpose of this evaluation is to ensure that the site is ready for the equipment installation, and to evaluate modifications or any construction that may have been required.

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## **8.3.2.3 Site Evaluation Planning Conference.**

A site evaluation planning conference will be conducted by the government and be part of the intermediate site evaluation. Cognizant service's facilities planning personnel, in conjunction with contractor representatives, will meet to review and survey facility modification efforts, eliminate problem areas, and finalize the support facility configuration as required. The results of the site planning conference will be published as meeting minutes by the chairman.

## **8.3.2.4 Final Site Evaluation.**

Following completion of TCS SE installation, functional check-out, and verification, government and contractor personnel will conduct a final facilities site evaluation. The objectives of this evaluation are:

- To determine the final arrangement of installed TCS SE and ancillary equipment.
- To obtain reasons and justifications for changes, if any, to the previously approved plans.
- To document facility configurations and the changes incorporated at each site.

Information obtained in this evaluation will be used to prepare a final site report.

## **8.3.2.5 Contractor Support.**

The systems integration contractor will provide TCS/facility interface support. This support includes participation by the contractor in pre-design conferences for shore sites within the United States continental limits, consisting of two conferences per site/unit, not to exceed five sites. The contractor will prepare site activation plans, schedules, and site activation data in accordance with section 14. The contractor will be prepared to provide, by lease or construction, facilities at government activities that are required for the contractors use, including bonded warehouses. In addition, the contractor will provide facility planning factors that influence workload and the size of maintenance work centers. Examples include numbers and rates of TCS and SE item weapons replaceable assemblies (WRA)/shop replaceable assemblies (SRA) inductions, expected turnaround times, and storage area requirements.

## **8.3.3 Installation Services.**

If required, the systems integration contractor will install, check-out, and verify operation of the TCS SE/trainers, at each shore site planned for activation up through completion of the production run. After requirements are made known by AIR-4.0, and ship alterations (SHIPALTS) are approved, funded, and scheduled, Navy and shipyard personnel will modify ship facilities under NAVSEA direction.

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## **8.4 ILS Management Requirements.**

ILS management requirements include support equipment/trainer installation data, installation control drawings, results of site evaluations and surveys including reports and data packages.

## **8.5 Schedule.**

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## **9. INTERIM SUPPORT**

This section summarizes planning for contractor and government participation in TCS and SE logistic support during the interim support period. It provides the basis for a smooth and timely transition from contractor to government support.

### **9.1 Objective.**

The objective of interim support is to introduce TCS and SE into the operational inventory while achieving and sustaining a high level of operational readiness at the first site, and providing a steady, incremental, and systematic growth in government support capability. Included is:

- Full contractor support of TCS and SE prior to testing.
- Selected contractor support during testing.
- Phased transition of this support as the government acquires the organic skills and material resources necessary to assume responsibility without degradation of operational capability.

### **9.2 Interim Support Summary.**

Contractor support during supportability T&E is to be provided in accordance with section 10. After supportability T&E ends, and until each government site is transitions to organic maintenance and supply capability, the contractor will provide complete support. Complete interim support includes total responsibility for TCS maintenance, repair of interim support assets, repair of repairables, support equipment and repair thereof, supply support, training, trainers and repair thereof, software maintenance, technical manuals, and engineering and technical support.

#### **9.2.1 Interim Support Transition.**

During production, contractor organizational (O) level support will begin transition to government O level support when the first production article is delivered and be completed at the IOC date. (See section 1.4).

- Complete government organizational (O) level support capability will be established by the host UAV initial operational capability (IOC) date.
- Complete government intermediate (I) level capability will be established by material support date (MSD).
- Complete government depot (D) level will be established by government support date (GSD).

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Contractor support will be phased out at each government site in accordance with a phased schedule with firm milestones. Planning for contractor TCS and SE support is to provide for adequate logistic response times during supportability T&E and early operations, and for a phased transition to government operational support. All data collected during development, production, and early operations periods are to become part of the data base used to effect formal transition to government support.

## **9.2.2 Interim Support Basis.**

All interim support planning is to be based on and traceable to data developed by the LSA, the master site/unit activation schedule, the supportability T&E schedule, the training schedule, and the TCS production schedule. Interim support planning is a joint government and contractor responsibility.

## **9.3 Interim Support Planning.**

Interim support will be provided in consonance with paragraph 9.2, above. A detailed interim support plan will be developed by the government and contractor, that includes all the elements which follow. Contractual warranty provisions applicable to TCS and SE will be considered in each aspect of the interim support plan.

### **9.3.1 Site Activation/Interim Support Planning.**

The system integration contractor will develop a combined site activation/interim support plan for each site to be supported. These plans will be prepared as indicated in section 14.

### **9.3.2 Interim Contractor Supply Support (ICSS).**

The interim support plan will meet the following interim support planning requirements. The contractor will establish and operate an interim contractor supply support (ICSS) program to provide interim support of TCS and SE assemblies, subassemblies, components, and repair parts. Unless otherwise required, the ICSS program will include contractor's bonded warehouses, a contractor repair of repairables (ROR) site, and a plan for transition to government support.

#### **9.3.2.1 Spares and Repair Parts Lists.**

The contractor for LSA will progressively prepare lists of recommended spares and repair parts, including vendor items required to maintain TCS, SE, and training equipment, for the duration of the interim support period. These lists will be in consonance with the maintenance concept (see section 1), interim LSA results including the interim support items list (ISIL), the supportability T&E schedule, the master site/unit activation schedule, the training schedule, and the production schedule. Lists will be provided to the government for approval as part of the support material list (SML) submissions.

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## **9.3.2.2 Government Furnished Data.**

The contractor will request that the government furnish lists of recommended spares and repair parts and technical manuals for TCS equipment and SE that are classifiable as GFE.

## **9.3.2.3 GFE Item Support.**

The contractor will indicate to the government: (1) GFE items recommended for support; (2) the required delivery schedule; and (3) spares and repair parts for GFE that need to be furnished by the government. The ACO will request required GFE and will requisition spares and repair parts through normal supply channels.

## **9.3.2.4 SML Submittal.**

The contractor for LSA will furnish to the government, SMLs that contain consolidated listings of items and quantities of contractor and government furnished spares and repair parts, maintenance assistance modules (MAMs) if required, and equipment and SE that is GFE. A delivery schedule that is based on the supportability T&E schedule, training schedule, and master site/unit activation schedule will be included.

## **9.3.2.5 Spares Acquisition Integrated with Production (SAIP).**

During E&MD and low-rate initial production, the government and contractor will employ the concept of concurrent release of spares orders with identical parts as installments on the pre-production and low-rate initial production TCSs. (See section 7 for SAIP requirements related to government supply support.)

## **9.3.2.6 SML Approval.**

The NAVAIR supply support manager, AIR-3.1.3, will approve, modify and approve, or disapprove SMLs. The NAVICP will support items with established National Stock Numbers (NSNs) that are common to more than one TCS or SE item. Those items that cannot be supported through the supply system will be reported to NAVAIR. These items will be procured as SML items.

## **9.3.2.7 SML Interim Release.**

In the event that contractor has not received an official response from the government within 120 working days from the date of initial submission of the SML, the contractor

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will forward a message or telegram to the NAVAIR supply support manager, AIR-3.1.3, with a copy to the PCO, indicating firm need dates, and requesting the estimated response date.

## 9.3.2.7.1 Support Material List Asset Supplements.

During the interim support period, the contractor's inventory manager will assign a low-level quantity figure to each SML line item to be held in contractor-bonded storerooms, intended for user issue.

## 9.3.2.7.2 Emergency Procurement Requirements.

If a demand occurs for a part not on the approved SML, or for a part that reaches a no stock condition due to unexpected high consumption, the contractor will request by telephone the authority to procure the item to satisfy the immediate demand, through emergency procurement procedures that will be established in the interim support plan.

## 9.3.2.8 Spares and Repair Parts Deliveries.

Spares and repair parts deliveries will be in consonance with the supportability T&E schedule, the training schedule, and the master site/unit activation schedule. Spares and repair parts will be sent to and received at contractor-bonded storerooms. (See section 11 for interim support PHST requirements.)

## 9.3.2.9 Storage Requirements.

In consonance with the site/unit activation schedule and 12 months prior to each applicable site activation, the contractor will submit an estimate of contractor space required for bonded storerooms and other tenant requirements, for government approval. A tenant agreement will be developed by the government and the contractor.

## 9.3.2.10 Inventory Control.

The systems integration contractor will assume accountability for interim spares and repair parts, equipment, and SE. The contractor will control issues and maintain complete inventory records. These records will be used to assist in the transition to complete government support. Inventory control will be exercised at contractor-bonded storerooms at sites as provided for in the approved interim support plan.

## 9.3.3 SE and Support of SE.

Selection, acquisition, and support of SE during the interim support period will be as indicated in sections 3 and 6. The systems integration contractor will provide logistic support for all contractor-furnished SE until such time as the government is capable of assuming support responsibility. This support will include suitable work-arounds when

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SE assets are not readily available at each site. The contractor will develop alternatives as required to ensure that adequate support for SE assets is provided.

Repair and support of government-furnished SE at government sites will be a government responsibility.

## **9.3.4 Repair, Overhaul, or Modification of Spares and SE.**

The contractor will ensure that contractor-furnished repairables are maintained in a serviceable and properly configured condition in order to properly support TCS and SE during the interim support period. The government will develop and establish a repair of repairables (ROR) contract.

### **9.3.4.1 Repair of GFE.**

Repairable TCS and SE assemblies and subassemblies procured as GFE and accepted by the government, excluding those items procured under warranty clauses, becoming defective during the interim support period will be repaired, calibrated, modified, or replaced by the contractor, within established funding limitations, at the established ROR sites.

Evaluation of contractor repair or replacement of COTS equipment will be evaluated to minimize cost to repair spares, GFE, and bailed GFE. This may result in more economical purchase and management of GFE assets by the contractor than if the government purchases bit and piece support for repair of repairables and inventory the material in bonded storerooms.

### **9.3.4.2 Repair of Bailed GFE.**

Items furnished as GFE, including SE under the inventory control of the contractor, that cannot be repaired locally will be exchanged for a serviceable unit through government channels. If an item initially provided as GFE cannot be replaced by the government activity, the ACO will be authorized to approve repair of the item by the contractor, within established funding limits. Requests for replacement or instructions concerning disposition of GFE will be submitted to the ACO who will advise the contractor accordingly.

### **9.3.4.3 Logistic Response Times.**

The contractor will propose as part of the initial submission of the interim support plan, specific logistic (maintenance and supply) response times to be maintained by the contractor during the T&E and early operational periods of interim support. Response times will be optimized to the operational requirement, with priority given to the conduct of INSURV, TECHEVAL, and OPEVAL with minimum delay due to logistic down time. Interim depot support response time during TCS and SE early operations will simulate



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depot repairable item turnaround times to be expected from the government depots that are fully operational, but not to exceed 30 days.

## **9.3.4.4 GFE Delivery Status.**

The contractor must prepare and submit to the government, GFE delivery delinquency reports when TCS and SE spares and repair parts are delinquent, based on the training and site/unit activation schedules. (See section 9.3.10.)

### **9.3.4.4.1 Periodic Meetings.**

The contractor must act as co-chairman in periodic ILS GFE meetings and must report status of GFE material. The meetings are to be chaired by JPO and the contractor, and usually consist of representatives from the IPT, all user services, and NAVSEA. Problem areas in GFE, status of delinquent equipment and potential work-arounds are addressed during each meeting.

## **9.3.5 Maintenance Transaction and Consumption Usage Reporting.**

### **9.3.5.1 Maintenance Transaction Reporting.**

The systems integration contractor will record all maintenance transactions that involve work performed by the contractor on TCS, systems, subsystems, components, and SE. The contractor will accept and maintain all records of maintenance transactions that involve work performed on CFE interim support assets by government personnel, and will include these transactions when performing data analysis.

### **9.3.5.2 Consumption/Usage Reporting.**

Commencing with the start of interim support, the contractor will prepare consumption/usage reports on TCS and SE spares and repair parts, SE, CFE, and GFE items that are consumed. These items are those listed in the SML and assigned to the contractor for inventory management responsibility.

### **9.3.5.3 Data Analysis.**

The government and contractor will conduct analysis of the collected data, compare the measured performance with LSAR data, and develop corrective measures.

## **9.3.6 Technical Manuals Selection and Acquisition.**

Selection and acquisition of technical manuals used during the interim support period will be in accordance with sections 3 and 5.

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## **9.3.7 Manpower, Training, and Training Equipment.**

Selection and acquisition of manpower, training, and training equipment used during the interim support period will be in accordance with sections 3 and 4.

### **9.3.7.1 Support for Training Assets.**

Upon contractual authorization, the contractor will provide support in the operation and maintenance of training equipment/trainers until the government is capable of assuming support responsibilities. The date for transitioning support of training equipment/trainers will be specified in the phased support plan applicable for each training site.

## **9.3.8 Personnel Requirements.**

### **9.3.8.1 Field Support Personnel.**

The government will provide the personnel and labor required to manage the spares, repair parts, and SE at each interim support site. Management includes movement within storage areas including bonded warehouses, and related administrative, clerical, and technical support. Technical support will include assistance in performance of maintenance on the TCS and related support and training equipment during the transition to government support. Personnel and labor will be provided at the following sites:

**TBD**

### **9.3.8.2 Contractor Engineering and Technical Services (CETS) Plan.**

Contractor Engineering and Technical Services (CETS) personnel will be used for shore sites only and a CETS plan provided. The contractor's plan for providing contractor field support will be based on the supportability T&E schedule, the training schedule, the site/unit activation schedule, and the LSA.

### **9.3.8.3 Engineering and Technical Services (ETS) Plan.**

ETS requirements, including Navy ETS (NETS) and contractor ETS (CETS) will be planned by the ILSM in coordination with PEO(CU)-PM TS, the applicable UAV PM, Type Commander (TYCOM). and NAESU or PACMISTESTCEN in accordance with NAVAIRINST 4350.2C. ETS planning will be documented herein, in the LRFS, and in individual phased support plans. Required ETS will be requested by the ILSM directly from NAESU or PACMISTESTCEN.

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## **9.3.9 Transition to Government Support.**

The requirements of supportability T&E (section 10) dictate progressive transfer of selected logistic responsibilities to government personnel in order that the adequacy of TCS logistics support may be examined under simulated and real operational conditions (INSURV, TECHEVAL, and OPEVAL). In the event the prototype logistics are found to be inadequate, it will be the contractor's responsibility to support the system until logistics deficiencies are corrected. Formal transition of logistic support from the contractor to the government will begin when the first production article is delivered. Planning for this transition will include the following:

- Residual support material.
- Residual spares, repair parts, and GFE.
- Facilities transition.
- Parts screening
- Transition conference.

## **9.3.10 JCALS/CITIS Requirements.**

In accordance with JCALS guidance, the CITIS will be designed by the contractor to permit on-line direct access by the government to interim support status information beginning 60 days prior to TECHEVAL during E&MD, and continuing during the Production and Deployment (P&D) phase. Interim support status information will include:

- a. Beginning prior to TECHEVAL, the delivery status of each planned logistic element for each TCS system and subsystem.
- b. Beginning prior to TECHEVAL, the delivery status of each planned logistic element for each SE item and training equipment.
- c. During ICSS, the status and detailed accounting of all items inducted for contractor repair.
- d. During ICSS, the delivery status of all TCS and SE interim spares and repair parts.
- e. Beginning 120 days prior to IOC and continuing until GSD, the status of the transition from contractor to government maintenance and supply support capability, by site and by maintenance level (O, I, and D).

## **9.4 Support Plan Approval.**

The contractor will present to the IPT for complete review the interim support plan. Revisions to the plan will be made by the government and the contractor as required by

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IPT decisions. After revisions are developed and the ILSM has approved the plan, specific guidance, implementation procedures, required actions, action activities, and target dates will be defined by the government and the contractor. Required actions may include a contract amendment. The revised interim support plan then becomes a basic input for the JILSP, and will become Appendix C hereto.

## **9.5 Support for Test and Evaluation.**

The contractor will test and evaluate supportability in accordance with section 10.

## **9.6 Support for Depots/PSD/CFA.**

The contractor is to provide support for PSD/CFA and government depot capability development. (See sections 1 and 13.)

## **9.7 ILS Management Requirements.**

ILS management requirements include repaired, reworked, and calibrated GFE items, support material lists, maintenance transaction and consumption usage reporting data analysis reports, contractor engineering and technical services plan and reports, and transition reports.

## **9.8 Schedule.**

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## 10. SUPPORTABILITY TEST AND EVALUATION

This section establishes planning requirements for TCS and SE supportability test and evaluation (T&E).

### 10.1 Objectives.

*System supportability assessments are performed at logical points throughout a system's life. During the development phases they obviously occur more frequently than during the operational phase because the rate of design change is much greater, and the degree of uncertainty and risk is higher.*

*This portion of the support analysis process is conducted throughout a system's life cycle and is used:*

- *to demonstrate the validity of the analysis*
- *to support current planning decisions*
- *to maintain the accuracy of the information products developed using the analysis results*
- *to support the assessment of alternative concepts and proposed changes*

Specific objectives of TCS supportability T&E are to:

- Demonstrate and verify the achievement of ILS performance specifications. (See section 1.)
- Assess the adequacy of TCS and SE supportability, and compare logistic support planning and execution results with contractual requirements.
- Determine the validity of LSAR data including reliability and maintainability, and resulting TCS and SE maintenance plan data.
- Reduce overall support system risks associated with TCS and SE operational introduction.

*Assessment and verification of supportability starts with early planning for verification of support concepts and continues on an interactive basis. Assessment and verification methods and techniques encompass technical reviews, modeling, simulation, demonstration, and testing. Assessment and verification procedures, like all support analysis activities, need to be tailored to the type of acquisition, the program phase, and the risk elements being addressed.*

*TCS supportability demonstration and test requirements and criteria will be developed for the particular performance characteristics to tested. These requirements will be included in the Test and Evaluation Master Plan for the program. All*

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*supportability performance requirements, including those which apply to the support system, should be tested and verified.*

*Results of supportability assessment and verification activities are used to update the support analysis information and estimates. Issues resulting from analysis of supportability assessment results are used to develop improvement recommendations.*

## **10.2 TCS Supportability T&E.**

Supportability T&E applies to TCS, SE, and training equipment, and provides for a phased evaluation of TCS supportability characteristics, and of planned logistic support resources. Supportability T&E relates to overall TCS test and evaluation, including development T&E (DT&E) and operational T&E (OT&E). Supportability T&E is conducted to provide progressive assurance and subsequent proof that contractual ILS performance specifications have been met.

Supportability T&E will be conducted in conjunction with TCS Reliability and Maintainability demonstrations, and system safety and human engineering testing, in order to provide a basis for an objective determination of overall TCS supportability.

## **10.3 Supportability T&E Strategy.**

*A strategy for performing the selected support analysis activities should be developed early in the program. The support analysis strategy represents the supportability analysis input to the program's acquisition strategy. It should identify, and give the rationale for, the inclusion or exclusion of specific support analysis activities. Each activity that is included should be assigned to an organization responsible for its conduct.*

*Support analysis activities in each program phase should be scoped to the objectives and level of design anticipated. The strategy should address all support analysis activities needed to analyze, define, and verify the supportability thresholds and objectives for a system and to assess the risks in accomplishing the thresholds and objectives. Select the supportability objectives and analysis to include in the strategy based on the following considerations:*

- *The probable hardware and software designs, support concepts, and operational approaches for the new total system which include gross estimates of the reliability and maintainability, O&S costs, logistic support resources, and readiness characteristics of each total system component design and the operational concept.*
- *The availability, accuracy, and relevance of readiness, O&S cost, and logistic support resource data required to perform the proposed support analysis activities.*
- *The potential design impact of performing the support analysis activities including the estimated supportability, cost and readiness improvement and the reduction in program risks.*

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*The strategy should also include an initial estimate of the cost to perform each support analysis activity. It should also rate the degree of cost effectiveness of performing each analysis, given the projected costs, the anticipated benefit to be derived, and the program schedule constraints under which it must be conducted. These ratings are then used to tailor support analysis activities to conform to overall acquisition program strategy, plans, schedules, and funding.*

*To be useful, the strategy needs to be current. The support analysis strategy should be updated as necessary based upon the analysis results and subsequent refinement of plans, schedules, and funding profiles. When the results of an analysis are no longer required or provides little or no value to the program, the analysis should be discontinued.*

The supportability T&E strategy will be developed and documented in a preliminary supportability assessment plan.

## **10.3.1 Supportability Assessment Plan.**

The systems integration contractor will establish and document supportability T&E objectives, resources, procedures, and schedules. The primary supportability T&E objective is to demonstrate and verify TCS and SE ILS performance specifications (See section 1). Validation, demonstration, and verification will be accomplished by the end of supportability T&E Phase III. Data specified above, and the supportability T&E strategy, will be provided to the government as a supportability assessment plan. When approved by the government, this plan will specify TCS performance to be achieved during the first three assessment phases. The plan will be reviewed and approved by the ILSM for incorporation in the TUAV/TCS and Predator/TCS Test and Evaluation Master Plans, and in the JILSP as Appendix D.

## **10.3.2 TCS Support Implementation**

*TCS support implementation requires detailed planning that addresses the how, who, what, when, where, why, and how much for each selected TCS logistic support activity. The plan should clearly define the input/output interface relationships between all disciplines involved with each analysis and documentation activity. It serves as the basis for the supportability analysis portion of the system engineering master plan.*

*To be useful a plan must include the following types of information. The range and depth of each activity outlined below should be fitted to the level of TCS system design development expected in the phase for which the plan is being prepared.*

- *Describe how the support analysis activities will be conducted to meet total TCS system requirements defined in the applicable program documents.*

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- *Describe the management structure and authorities applicable to support analysis activities. Include the interrelationship between line, service, staff, and policy organizations.*
- *Schedule estimated start and completion points for each activity. Identify schedule relationships and other system engineering and acquisition logistics activities.*

*In addition the plan must describe how support analysis activities and data will interface with other system engineering and acquisition logistics activities and data. The description should be sufficiently detailed to define the required interface with the program activities established to meet total TCS system requirements for:*

- *Product design*
- *Product reliability*
- *Product maintainability*
- *Human factors engineering*
- *Total system standardization*
- *Total system support analysis*
- *Acquisition logistics functional elements (e.g., PHS&T, initial provisioning, maintenance planning, etc.)*
- *Product hardware testability*
- *Total system survivability*
- *Total system test and evaluation program*
- *Product hardware and software configuration management.*

*Identify the total TCS system components upon which support analysis activities will be conducted. Relate them to the cost accounting*

## **10.4 Supportability T&E Program.**

The supportability T&E program will be established as indicated below. Overall supportability T&E responsibilities are summarized in Table 10-1.

### **10.4.1 Management and Control.**

The government and TCS systems integration contractor will ensure that the efforts and data products of related TCS and SE prototype test and evaluation events are used to the maximum extent. To eliminate duplication of effort and reduce testing costs, supportability T&E efforts will be coordinated and conducted concurrently with engineering testing, flight test and INSURV demonstrations, and evaluations. Phase III verification will be planned to be performed in conjunction with TECHEVAL and OPEVAL.



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## 10.4.2 Test and Evaluation Coverage.

TCS supportability T&E applies equally to maintenance engineering inspections and demonstrations; maintainability verifications and demonstrations; and LSAR, maintenance plans, and ILS planning data evaluations; and to:

- TCS, its built-in test, systems, and equipment.
- Support equipment and training equipment/trainers provided by the contractor or contractor's subcontractors and vendors.
- Training materials including embedded interactive training.
- All other prototype logistic elements, including technical manuals.
- The interface between GFE and TCS to the extent necessary to meet contract requirements.
- Engineering changes that necessitate re-testing because of modifications to the planned support system.

## 10.4.3 Test and Evaluation Phases.

Supportability T&E will consist of the following phases that are conducted during TCS Engineering and Manufacturing Development (E&MD) and post-deployment.

### 10.4.3.1 Phase I--Validation.

The Phase I validation will be performed by the contractor as specified in the government-approved supportability assessment plan. Data will be retained in the contractor's facility during the Engineering and Manufacturing Development (E&MD) contract period, available for review by the government as indicated.

During Phase I (DT-IIA), the systems integration contractor will conduct incremental supportability validation efforts, commencing with initial design and continuing through the component and TCS development phase. The objectives of this phase are:

- Verify that the LSAR and maintenance planning data are based on predicted (but de-rated) R&M data such as operational MTBF and operational MTTR.
- Complete contractor tests prior to Phase II demonstrations.

Phase I commences with the completion of the **TBD** and is to be completed prior to Phase II (DT-IIB). The government will evaluate, every three months, related contractor logistic support documentation, processes, and analyses to determine the degree to which the requirements of Phase I are being satisfied; the degree to which verification has a measurable impact on the design process; and the degree to which the LSAR and ILS planning reflect the evolving design. The system integration contractor will make available for evaluation all data identified seven working days prior to the scheduled evaluation date.

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**Table 10-1**  
**Overall Supportability T&E Responsibilities**

<u>Government Tasks</u>	<u>Contractor Tasks</u>
<b><u>Phase I (DT-IIA)-Validation</u></b>	
a. Evaluate LSAR and maintenance plan data	a. Validate LSAR and maintenance plan data
b. Evaluate emerging LSAR logistic element data and documentation	b. Validate emerging LSAR logistic element data
c. Evaluate emerging R&M data	c. Initially validate prototype logistic elements
	d. Perform R&M, system safety and human engineering testing
	e. Compare R&M data to LSAR related data
<b><u>Phase II (DT-IIB)-Demonstration</u></b>	
a. Witness initial R&M and supportability demonstrations	a. Perform initial R&M, system safety, human engineering, and supportability demonstration.
b. Witness mockup reviews, demos, and tests	b. Perform mockup reviews, demos, and tests
c. Evaluate prototype logistic	c. Demonstrate prototype
d. Evaluate LSAR and maintenance plan data	d. Update and revalidate LSAR and maintenance plan data
e. Examine correction of deficiencies	e. Correct deficiencies

**Table 10-1**  
**Overall Supportability T&E Responsibilities (continued)**

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## **Phase III (DT-IIC)-Verification**

- |                                                                                           |                                                                                                   |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| a. Witness R&M and supportability demonstrations                                          | a. Perform R&M and supportability demonstrations                                                  |
| b. Witness the ILS performance specification demonstrations                               | b. Demonstrate compliance with ILS performance specifications                                     |
| c. Evaluate the impact of the operational environment on readiness and availability       | c. Assist in analysis of operational readiness and availability during OPEVAL                     |
| d. Evaluate the validity of the maintenance plan reports, and prototype logistic elements | d. Demonstrate the validity of the LSAR, maintenance plan reports and prototype logistic elements |
| e. Witness functional configuration audit/ physical configuration audit (FCA/PCA)         | e. Perform FCA/PCA                                                                                |
| f. Witness the CITIS demonstration                                                        | f. Demonstrate the CITIS (section 1.10.1)                                                         |
| g. Examine correction of deficiencies                                                     | g. Correct deficiencies                                                                           |

## **Phase IV-Post-Deployment Verification**

- |                                                    |                                          |
|----------------------------------------------------|------------------------------------------|
| a. Verify ILS performance specification thresholds | a. Support the government's verification |
| b. Develop corrective actions                      | b. Support corrective actions            |
| c. Take corrective actions                         |                                          |

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## **10.4.3.2 Phase II--Demonstration.**

During Phase II (DT-IIB), the systems integration contractor will conduct and manage the demonstration in accordance with the government-approved supportability assessment plan. The demonstration will include a maintainability demonstration and a supportability demonstration. This phase commences 120 days prior to initial R&M demonstrations and is completed after deficiencies noted have been corrected. Objectives of this phase are to:

- Determine whether specified operational readiness and availability and reliability and maintainability specification requirements will likely be achieved.
- Determine whether LSAR data match the TCS configuration, and whether MTBF and MTTR inputs to LSA are de-rated and valid.
- Review TCS and SE maintenance plans.
- Conduct TCS and SE mockup reviews, demonstrations, and tests.
- Identify, schedule, and correct maintainability and logistic support deficiencies.

The JPO will task the appropriate NAVAIR R&M competency to witness the Phase II TCS demonstration. The contractor will document demonstration results and perform analysis. The contractor will be responsible for correction of TCS and SE maintainability, logistic support, and supportability deficiencies.

### **10.4.3.2.1 Minimum Maintainability Requirements.**

As a minimum, the following maintainability requirements will be demonstrated during Phase II.

- Achieved TCS and SE quantitative and qualitative maintainability, including MTTR and Mmax c.
- Accessibility of TCS and SE components for removal, testing, maintenance, and replacement.
- Adequacy of the skills specified in the TCS and SE maintenance plans to perform troubleshooting and repair (including calibration).
- Adequacy of TCS and SE human engineering and safety design interfaces with operators and maintainers.
- With TCS and SE non-destructive fault insertion, operator capability to fault isolate to a functional assembly.
- Capability of the TCS to alert the operator audibly and visually to system faults that are safety-related.
- With non-destructive fault insertion, adequacy of TCS and SE built-in test features.
- Accuracy of TCS and SE maintenance (including calibration) procedures in preliminary maintenance manuals.
- Adequacy of planned support for the TCS and support equipment.
- Adequacy of TCS and SE operator manuals.

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## 10.4.3.2.2 Phase II Demonstration Requirements

The Phase II demonstration will be conducted by the contractor in accordance with the government-approved supportability assessment plan.

## 10.4.3.2.3 Support Requirements.

The contractor will logistically support the TCS and SE during Phase II.

## 10.4.3.2.4 Data Collection.

Failure and maintenance data generated during R&M tests and demonstrations will be documented and translated by the contractor using a system that is compatible with the respective Army, Navy, and Air Force maintenance data collection systems (see OPNAVINST 4790.2E, Air Force66-1). Details of the data collection system will be as indicated in section 15.

Types of data to be collected during Phase II are necessary to document and translate R&M demonstration and supportability assessment results, and to verify LSAR and maintenance plan data. Data to be collected, translated, or derived include, but are not limited to failure data and maintenance/logistic data, as indicated in section 15.

## 10.4.3.2.5 Data Usage.

Data collected during demonstration (Phase II) will be used to assess failure rates, maintenance tasks performed, time expended, delays encountered during maintenance, logistic delay times, number of personnel used, and skills and skill level used.

## 10.4.3.2.6 Data Analysis.

The contractor will evaluate, analyze, and compare demonstration data with emerging LSAR and maintenance plan data. Significant deficiencies in planned logistic support will be documented for use in updating LSAR data.

## 10.4.3.2.7 Demonstration Documentation.

The contractor will document significant discrepancies and deficiencies discovered during Phase II demonstration, in the contractor's action chit format.

Library. The contractor will maintain a complete library of all action chits generated during the demonstration phase by government and contractor personnel.

Action Chit Status Report. Following the start of the Phase II effort and continuing through Phase IV, the contractor will provide to the Logistics Manager (LM) a quarterly status report of all action chits.

## 10.4.3.3 Phase III--Verification.

*The Phase III verification will be planned and conducted in accordance with the supportability assessment plan. Preventive, corrective, servicing, and calibration tasks*

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*selected by the government will be demonstrated. The contractor will document, analyze, and correct supportability deficiencies, as indicated below.*

During Phase III (DT-IIC), the contractor will provide support for the verification in accordance with the supportability assessment plan. The verification will include, during TECHEVAL, an R&M demonstration and a supportability assessment. Phase III commences 120 days prior to TECHEVAL and is completed after OPEVAL and PCA, and after all deficiencies noted during the verification are corrected. Verification during TECHEVAL is to be conducted by contractor and government personnel at a selected government facility. Evaluation during OPEVAL is to be conducted at a selected government facility. Objectives of this phase are to:

- Perform R&M demonstrations during TECHEVAL.
- Demonstrate during TECHEVAL compliance with TCS and SE ILS performance specifications.
- Evaluate during TECHEVAL and OPEVAL the impact of the actual operational, maintenance, and support environment on the reliability, maintainability, and availability parameters of the TCS.
- Verify and evaluate the correction of deficiencies discovered during Phase II.
- Demonstrate the validity of the LSAR, maintenance plan reports, and prototype logistic elements.
- Demonstrate during TECHEVAL and OPEVAL contractual compliance with TCS and SE maintenance and operator manpower limits.
- Demonstrate the CITIS (see section 7.5).
- Perform PCA after TECHEVAL and OPEVAL.

Satisfactory completion of the Phase III verification is a prerequisite to Logistics Manager (LM) concurrence with Approval for Full-Rate Production (AFRP).

#### 10.4.3.3.1 Phase III Details.

The basic intent of this phase is to verify achievement of ILS performance specifications, and to analyze the quality of prototype ILS elements and the extent to which these elements may contribute to logistic delay times that affect operational availability. The contractor-prepared supportability assessment plan for Phase III will provide for the collection of failure and maintenance data as they are generated during TECHEVAL and OPEVAL by the contractor personnel assigned to conduct the Phase III verification.

- a. Only those prototype logistic elements identified and provided through the ILS program will be used during verification. The sites selected for TECHEVAL and OPEVAL will receive no special outfitting or priority due to the verification.

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- b. The TCS and support equipment will be demonstrated by the contractor to operate at a level of performance no less than that called for in the supportability assessment plan.
  - During DT-IIC, the government will operate and maintain the TCS and support equipment, and the systems integration contractor will provide support as required.
  - Government personnel will operate and maintain the TCS during OPEVAL. All maintenance performed on the TCS during OPEVAL will be accomplished by government personnel instructed in operation and maintenance of the TCS.
  - If government personnel, in the accomplishment of required maintenance, find the applicable technical data, support equipment, or material support to be inadequate, the contractor will provide complete support, as required.
- c. All spares and repair parts required during TECHEVAL will be provided by the contractor. All spares and repair parts required during OPEVAL will be requisitioned through established supply channels, be drawn from among assets previously identified on government approved support material lists (SMLs), or be provided by the contractor as required.
- d. Inadequacies of TCS or SE supportability, or of prototype logistic elements, will be documented by the contractor and analyzed by government personnel.
- e. Correction of deficiencies noted in Phase III is a contractor responsibility.

## 10.4.3.3.2 Support Requirements.

Support for Phase III will be provided by the contractor as follows:

- Technical data
- Support equipment (SE)
- Supply support

## 10.4.3.3.3 Personnel.

Operator and maintenance personnel will be provided by the government. Maintenance personnel are to be representative of the number, skills, and skill levels determined by LSAR data. The contractor for LSA will provide technical representatives as necessary.

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## 10.4.3.3.4 Test Environment.

The evaluation will be performed in an environment that, as much as possible, is similar to the intended TCS operational and maintenance environment.

## 10.4.3.3.5 Preliminary Phase III Data.

The contractor will provide data prior to the start of both TECHEVAL and OPEVAL as follows:

- Configuration status report
- Support status report
- Technical manual status report

## 10.4.3.3.6 Data Documentation.

Failure and maintenance data generated during Phase III verification will be documented by the government using VIDs/MAFs as appropriate.

Data Usage. Data collected by the government during Phase III will be used by the contractor and the government to assess TCS and SE failure rates, maintenance tasks performed, time expended, delays encountered during maintenance, logistic delay times, number of personnel used, skills and skill levels used, SE adequacy and availability, training equipment adequacy, technical data adequacy and availability, and supportability and logistic support deficiencies.

Data Analysis. The government will evaluate, analyze, and compare evaluation data with the current TCS and SE LSAR and maintenance plan data. Significant discrepancies between planned and achieved maintenance plan and LSAR data will be documented for use in updating R&M analyses, task, skills, and time line analyses, LORA, and maintenance plan data. Significant deficiencies in planned logistic support will be documented for use in updating LSAR data.

Verification Documentation. The contractor will independently document significant discrepancies and deficiencies discovered during Phase III, and maintain the library and action chit status report.

## 10.4.3.4 Phase IV Post-deployment Verification.

Phase IV post-deployment verification will be conducted at an operational unit or activity, and will be performed by the government (assisted by the contractor). Phase IV commences as scheduled by the ILSM during full-rate production, and is completed when known deficiencies are corrected. The objectives of this phase are to:



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- Analyze maintenance, failure, and support data.
- Verify ILS performance specification thresholds.
- Determine whether corrective actions including engineering changes are required.
- Document recommended corrective actions and required improvements.
- Complete corrective actions and develop improvements.

The Phase IV post-deployment verification will be planned and conducted in accordance with the supportability assessment plan. TCS and SE will be supported and maintained by government personnel. The contractor will document and analyze supportability deficiencies, and provide results.

## **10.4.5 Supportability T&E Reports.**

The contractor will prepare periodic reports that indicate the progressive results of Phases II, III, and IV of supportability T&E.

- A final report covering results of the Phase III verification, including any significant remaining Phase II demonstration information, will be provided to the government.
- A final report covering results of the Phase IV post-deployment verification will be provided.
- These reports will be used by members of the IPT to track discrepancy resolution and logistic support planning and execution improvements.

## ***10.4.6 ILS Management Requirements.***

ILS management requirements include maintenance and failure data, results of data analyses, support requirements status, demonstration documentation, and supportability assessment reports.

## **10.4.7 Schedule.**

**TBD**

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## **11. PACKAGING, HANDLING, STORAGE, AND TRANSPORTATION**

This section details government and contractor planning for packaging, handling, storage, and transportation (PHST) of TCS and SE spares and repair parts, and SE.

### **11.1 Objectives.**

The objectives of PHST planning are to:

- Plan for the transportation and protection of TCS and SE spares and repair parts, and of SE items.
- Execute cost effective PHST requirements.

*TCS transport and storage containers shall be reusable and enable the operators to set-up equipment within the established timelines in their ORDs.*

### **11.2 Government/Contractor Responsibilities.**

The JPO is the government coordinator for PHST planning and execution. NAVICP (Code3) will act as JPO's agent for the development, review, and approval of packaging data requirements.

- Execution of PHST requirements is a joint responsibility of the contractor and the Program Support Inventory Control Point (PSICP), NAVICP (Code 3).
- Requirements for and acquisition of reusable containers for TCS is the responsibility of ASO.
- The contractor is responsible for determining the type and extent of packaging for consumable items during the interim (pre-operational) support period.
- The government NAVICP (Code 3) will provide packaging for consumable items ordered for and following GSD.

#### **11.2.1 PHST Basis.**

The PHST planning efforts and data provided will be based on and traceable to TCS and SE design data and LSA data.

### **11.3 Preservation, Packaging, Packing, and Marking.**

The contractor will ensure that preservation, packaging, packing, and marking (PPP&M) techniques and processes used during E&MD provide a level of protection, preservation, and identification commensurate with the environment in which the items will be used by the contractor in support of planned TCS operational T&E.

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- PPP&M data to support subsequent life-cycle phases will be developed incrementally through the LSA process as TCS and SE designs mature.
- The contractor will provide related data as outlined below.
- Data will include data and drawings of previously used packaging, packing, and marking, especially if already approved by a DoD activity.

PPP&M summaries will identify packaging, handling, and storage information. They also may provide information relevant to the development of a transportability analysis report. Information should include dimensions and weight of an item, the degree of packaging required, and any special packaging, handling or storage instructions. Transport information should include the dimensions and weight, the different modes of transportation, any special tie-down or loading instructions and other similar information.

## **11.3.1 Data Requirements.**

The contractor will provide data as summarized below.

### **11.3.1.1 Major Repairable (Non-Consumable) Items.**

The systems integration contractor will identify all new major repairable weapons replaceable assemblies (WRAs) and shop replaceable assemblies (SRAs) through the LSA process. The contractor will also provide to the NAVICP (Code 3) detailed engineering data and drawings of these new WRAs and SRAs, and net item data. The required information will include:

- Dimensioned assembly/installation drawings.
- Item net (bare) weight.
- Item fragility factor.
- Parts list.
- Special packaging and handling requirements.
- Special marking requirements.

NAVICP (Code 3) will review the data indicated above that are provided by the contractor to determine candidacy of components for packaging in reusable containers. NAVICP (Code 3) will determine whether requirements for reusable containers can be satisfied by multi-application types or whether the containers should be designed and procured as a unique type. NAVICP (Code 3) container and packaging decisions will be transmitted to the contractor as spares packaging requirements during the interim support phase. Later, during item selection (provisioning), these packaging decisions will be input to master data files by the NAVICP (Code 3).

### **11.3.1.2 Consumable Items.**

The contractor will provide to NAVICP (Code 3) data concerning consumable items.

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## **11.3.1.3 Hazardous Materials.**

The contractor will identify environmentally hazardous materials, if any, among repairable and consumable items and prepare and provide to the NAVICP (Code 3) Material Safety Data Sheets.

## **11.3.2 Interim Support Period Requirements.**

The contractor will preserve, package, pack, and mark interim support material. Specifications will be contractually implemented by the contractor on vendors and subcontractors. In addition, the contractor will notify, in his format, local destination safety officers and NAVAIR (AIR-8.0H) when any hazardous materials are to be shipped, 30 days prior to shipment. Department of Transportation (DOT) clearance must be obtained for overland transport of hazardous materials.

### **11.3.2.1 Material Consigned/Designated for Immediate Use/Direct Turnover (CONUS).**

Preservation, packaging, and packing by the contractor will be as specified for Level C for non-hazardous spares and repair parts. Marking of all unit and shipping containers will be in accordance with specifications. In addition, all printed circuit card assemblies will have an initial wrap, bag, or pouch of electrostatic-free material. Special marking on related unit packages will state: "Items Susceptible to Electrostatic Discharge (ESD) Damage- Must be Opened/Handled at Approved Stations Only."

### **11.3.2.2 System Stock Replenishment/World-Wide Distribution.**

a. Major Repairables (Non-Consumable). Preservation and packaging will be as specified for level A. NAVICP (Code 3) will codify requirements, and identify these requirements on transmittal documents sent to the contractor. Unless specific exception is granted, existing reusable containers will be specified for use. Marking of all containers will be in accordance with specifications. Packing will be Level C for continental U.S. (CONUS) shipments and Level A for extra-continental U.S. (X-CONUS) shipments.

b. Piece Parts (Consumable). Preservation and packaging will be as specified for Level A. Marking of all containers will be in accordance with specifications. Packing will be Level C for CONUS shipments and Level A for X-CONUS shipments.

### **11.3.2.3 Marking Requirements.**

All unit, intermediate, and shipping containers will be marked in accordance with specifications. CONUS spares shipments intended for system stock require bar code markings, with the exception of multi-application reusable containers (containers used for multiple or different NSN applications) that do not require such markings.

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## **11.3.2.4 Damage Reporting.**

The contractor will ensure that all damage attributable to packaging or marking deficiencies is photographed to preserve a visible record. Damage reports will be provided to the contractor. Such damage reports will be available to the government upon request by the ILSM or the NAVAIR supply support manager.

## **11.3.2.5 Handling and Storage Requirements.**

- a. Items are not to be removed from the original packaging until ready for installation. Protective wraps, cushioning materials, containers, and reusable containers will remain intact during storage and local movement of material.
- b. Non-RFI repairable items will be placed directly into assigned reusable containers from which RFI spares are removed for retrograde shipment to repair activities.
- c. Items susceptible to damage from electrostatic discharge (ESD) or Electromagnetic (EM) forces will be handled in such a manner as to preclude degradation of operating performance or damage. ESD and EM protective wraps, barriers, and protective packaging materials will not be removed until the item is ready for installation.
- d. Hazardous materials will be separately packaged, stored, and handled in accordance with specifications in order to eliminate potential safety problems and preclude damage to material.
- e. Other handling and storage requirements will be specified.

## **11.3.2.6 Warranty Items.**

All non-reusable containers used by the contractor to ship warranty items, including spares and repair parts, will be marked "Warranty Item" as specified in MIL-STD-129J, Appendix C, paragraph 20.23.

## **11.3.3 Packaging Digital Data.**

Encoded magnetic computer tapes and disks will be placed in a barrier bag or wrapped in barrier sheet material as specified in 5.3.1.2, MIL-STD-1840A.

### **11.3.3.1 Marking Digital Data.**

Encoded magnetic computer tape or disk shipping containers will be labeled with a warning as specified in 5.3.1.3, MIL-STD-1840A.

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## **11.3.3.2 Protecting Digital Data.**

Encoded tapes, disks, and other electronically inscribed data will be protected as specified in 5.3.1.1, MIL-STD-1840A.

## **11.4 Transportation.**

### **11.4.1 Data Requirements.**

#### **11.4.1.1 Transportation Plan.**

The contractor will develop a transportation plan for TCS and related SE spares and repair parts. Transportation planning will include all intended shipping, receiving, and using activities and sites, all planned modes of transportation, and the relationship to program phases.

#### **11.4.1.2 Freight Classification Data.**

Freight classification data will be developed by the NAVICP (Code 3). The contractor for LSA will provide to NAVICP net item dimensions and weight of all new NAVICP cognizance consumable items. Data required to develop freight classification data for repairable items will have been already furnished to NAVICP. The contractor will also provide a point of contact at the contractor's plant in case additional information is required.

#### **11.4.2 Shipment.**

Shipment of TCS and SE spares and repair parts may be commercial on a government bill of lading for CONUS destinations and commercial and government transportation for overseas destinations. The most economical mode of transportation consistent with the priority, required delivery date, and transportability constraints will be used. When deemed necessary by the government, automatic test equipment will be shipped commercially in CONUS by air-ride van or equivalent. Shipments will be made in accordance with DoD and Navy directives.

##### **11.4.2.1 Shipment of Digital Data.**

Digital Data will be transported by best commercial practices as specified in MIL-STD-1840A.

## **11.5 ILS Management Requirements.**

ILS management requirements include LSAR PHST data, drawings, consumable item data, Material Safety Data Sheets, hazardous material shipping data, and the transportation plan.

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## 11.6 Schedule.

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## **12. LOGISTIC SUPPORT FOR ENGINEERING CHANGE PROPOSALS**

This section summarizes ILS planning requirements for engineering change proposals (ECPs) and configuration control.

### **12.1 Objectives.**

The objectives of this section are to ensure that complete logistic support is provided for engineering changes to TCS and SE, and that configuration control is imposed on logistic support documentation.

### **12.2 Planning Information.**

At the beginning of E&MD, a TCS functional baseline will be established and change control procedures will be implemented on hardware and software specifications. A contractor change control board (CCB) will be established at that time.

- During the development contract period, changes to LSA data are the contractor's responsibility and are to be accomplished in accordance with the government-approved configuration management plan.
- The allocated baseline is established in conjunction with Functional Configuration Audit (FCA).
- The preliminary product baseline is established in conjunction with Physical Configuration Audit (PCA).
- The product baseline is established after PCA and first article verification test (FAVT).
- Formal ECPs are required after the product baseline is established at the beginning of production and deployment, and will be prepared in accordance with MIL-STD-480B and MIL-STD-2167A.

The logistic engineering efforts and data provided in response to the planning requirements of this section will be traceable to the data prepared by the LSA. These requirements will be established as an integral part of the LSA process.

### **12.3 Support Tasks and Data.**

#### **12.3.1 Configuration Management Plan.**

The systems integration contractor will prepare and provide a configuration management plan.



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## **12.3.1.1 Configuration Management Plan Details.**

A separate section of the configuration management plan will be provided entitled “Logistic Support Documentation Configuration Management”. This section will address contractor procedures and controls for pre- and post-product baseline configuration management, control, and status accounting of support items including the LSA data base and logistic element documentation for TCS and SE. The LSA data base will include analysis data, maintenance plans, and the LSAR. Logistic element documentation will include logistic element deliverables such as component pilot rework/repair (CPR/R) data packages, rework specifications, master index of repairables (MIR), manpower planning data, training data and course materials, technical manuals, and provisioning data. (See also section 16.)

## **12.3.1.2 Configuration Management Plan Execution.**

After the configuration management plan is approved by the government, configuration management, control, and status accounting of the LSA data base including LSAR, maintenance plans, and logistic element documentation, will be implemented in accordance with the approved plan.

## **12.3.2 Design Change Processing.**

After the functional baseline is established, all proposed design changes will be processed through the contractor’s ILS organizational group responsible for LSA, and through all contractor logistic managers. The contractor’s LSA manager and logistic managers will ensure that the impact of design changes on planned logistic support is determined and analyzed. Analyses will include cost analysis. The contractor’s LSA manager will maintain a current record of all design changes and ECPs that are in process.

## **12.3.3 Engineering Change Proposals.**

After the product baseline is established, engineering change proposals will be provided by the contractor as required.

### **12.3.3.1 ILS Impact.**

After the product baseline is established, Class I engineering change requirements will include completion of pages 1 through 6 of DD Form 1692. Page 6 will be submitted with each ECP that affects support of the operational TCS, and an appropriate entry will be made in each of the items listed on the milestone chart. The first month depicted by the chart will be the ECP submittal month. The systems integration contractor will provide a complete disclosure of the ILS cost impact of each change in conjunction with Class I ECPs that are submitted on TCS, as follows:

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- a. In contractor's format, provide a table listing all elements included in block 35 of DD Form 1692-2, a yes or no answer on whether each element is affected by the change, and supporting details. The element "maintenance concept and plans" is to be interpreted to include the LSAR, maintenance plans, MIR, and CPR/R packages. The element "support equipment" is to be interpreted to include SE hardware and software and its total logistic support, including LSAR data, maintenance plans, reworks standards, MIR, and CPR/R packages.
- b. List impacts from the table (a., above) in block 35, DD Form 1692-2.
- c. Summarize the effects on ILS in block 29, DD Form 1692-1.
- d. In factor c. of block 48, DD Form 1692-3, the contractor will include all costs of LSA of the item (or higher assembly) to be changed, revisions to LSAR data, revised maintenance plans, revised MIR, and updated CPR/R packages. Also in factor c., the contractor will include all SE and SE logistic support change costs and all trainer and logistic support change costs.
- e. The contractor will include all non-recurring and recurring ILS costs from DD Forms 1692-3 and 1692-4 in costs that are summed in blocks 21 and 22 of DD Form 1692.
- f. Costs for the above data and labor will be included in ECP preparation costs.

## **12.3.3.2 Authorization for ECP.**

After authorization for the ECP has been received, the contractor will accomplish the following:

### **12.3.3.2.1 LSA/Management Plan Update.**

The to-be-changed item (or its higher assembly) automatically becomes an LSA candidate. The contractor will perform LSA as indicated in section 3. TCS and SE maintenance plans will be updated.

### **12.3.3.2.2 Logistic Support Data Revisions.**

The ISP, LSA data base including the LSAR, and all other logistic element documentation will be revised to reflect the results of the LSA and the updated maintenance plans.

### **12.3.3.2.3 Support Equipment.**

All proposed modifications to SE will be processed through NAVAIR in accordance with NAVAIRINST 4130.1B. The contractor will identify all SE engineering changes and modifications required to support TCS change and modification, and when

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authorized, provide SE and test program set (TPS) ECPs. All ILS cost impacts will be included as specified above.

## 12.3.3.2.4 Maintenance Training/Trainers.

The complete training/trainer impact of the TCS change will be indicated in the ECP. Additionally, the ECP will indicate whether previously conducted specific behavioral objectives or trainer specifications are affected, if factory training is affected, and if changes to existing or proposed training equipment are anticipated. All ILS cost impacts will be included.

## 12.3.3.2.5 Software Changes.

Computer resources change cost impact will be included in ECPs.  
(See also section 16.)

## 12.3.3.3 ECP Approval.

ECP review, analysis, and approval by the government will be in accordance with NAVAIRINST 4130.1B.

## 12.3.4 Technical Directives.

If required, the contractor will develop and approve technical directives.

### 12.3.4.1 TD Preparation.

Authorization by NAVAIR for the preparation of a technical directive (TD) will include the requirements to prepare and submit engineering data, supply data, and unless specifically waived, a requirement to validate the technical directive and related kit.

- The implementing action will specify the kits of parts and special installation tools in the quantities required to modify TCS, support equipment, training equipment, and spares.
- The PSD/CFA will develop the technical directive, submit the associated engineering and supply data, and validate the kit and technical directive.
- Not later than 120 days prior to the projected issue date, two copies of the proposed technical directive and related kit will be forwarded to the designated verification activity.
- One installation tool kit, if required, will also be forwarded. When installation is to be accomplished by the government, the verification activity will be a PSD/CFA activity as specified by NAVAIR.

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## **12.3.4.2 TD Verification.**

No later than 75 days before the projected issue date, the designated verification activity will verify the technical directive and related kits, and notify NAVAIR of the results.

Upon receipt of the verification results, the government will take required actions. After the verification activity reports satisfactory verification, the technical directive master will be complete. The complete master will be suitable for reproduction except for the issue date, rescission date, and signature. The technical directive master and two copies marked “PRELIMINARY COPY” will be forwarded to NATSF.

## **12.3.4.3 TD Submission.**

Each technical directive master will be accompanied by an endorsement confirming submission of design change notices (DCNs) associated with the technical directive. Simultaneously, “PRELIMINARY COPIES” annotated with a projected issue date will be forwarded to the government activity designated by NAVAIR for review, and to facilitate operational and maintenance planning.

## **12.3.4.4 TD Issue/Distribution.**

No later than six months prior to the projected issue date, the following actions will take place:

- The verification manager, as designated by NAVAIR, will review the proposed TD to ensure that discrepancies disclosed during the verification process and the verification manager’s internal review, are documented and returned to the preparing activity for rewrite/incorporation in the proposed TD.
- The preparing activity will incorporate the comments documented as a result of the verification process and internal review, and prepare the preliminary TD.
- When all verification discrepancies have been resolved, the preliminary TD will be forwarded to NATSF for internal review.
- NATSF will then forward the preliminary TD reproducible copy and supporting technical data to the ILSM for coordination of issue approval and assignment of issue and rescission dates. These dates are dependent on the availability of logistic elements. (Assignment of issue dates must allow for a six-week period to arrange for printing and distribution by NATSF.)
- The ILSM is to receive copies of all correspondence relative to TD verification, issue, and distribution.

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## **12.3.4.5 TD Implementation Schedule.**

Each change will be monitored for compliance status with use of the milestones submitted with each ECP. The typical milestone chart is shown in MIL-STD-480B (DD Form 1692-5). Status will be provided as required by the ILSM.

## **12.3.5 Change Kits.**

Change kits and reports of kit shipments will be developed by the contractor or the activity responsible for fabrication of kits.

## **12.4 Configuration Status Accounting.**

After the product baseline is established, the contractor will provide status accounting support as follows.

### **12.4.1 Status Accounting.**

After ten or more ECPs have been processed, the contractor will provide configuration status accounting data. Status accounting will be made part of the CITIS.

### **12.4.2 ECP Summary.**

After ten or more ECPs have been processed, the contractor is to provide an ECP summary listing and a periodic update of the listing. ECP summary data shall be made available through CITIS.

### **12.4.3 Configuration Management Reviews.**

After ten or more ECPs have been processed and ECP implementation has begun, the government and contractor will conduct periodically TCS and SE configuration management reviews.

These reviews normally will be held in conjunction with IPT meetings but may be held separately.

- Review agenda will include contractor configuration management and control procedures, ECP planning and implementation status, and configuration status accounting data. Status will include hardware, software, and support items.

### **12.4.4 Configuration Status Transition.**

After government configuration status accounting capability is developed, but prior to MSD, the contractor is to assist the government in transitioning configuration status accounting to the government.

## **12.5 Test Configuration Status.**

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See section 10 for additional planning requirements concerning configuration of test articles.

## **12.6 ILS Support of Changes.**

Formal supportability T&E of approved ECPs will be conducted as indicated in section 10.

## **12.7 Contractor Organization.**

**TBD**

## **12.8 ILS Management Requirements.**

ILS management requirements include ILS impact analysis data, engineering change proposals, technical directives and kits, impact analysis, workload analysis, and updated LSAR data, maintenance plans, and logistic support documentation.

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**Table 12-1**

**Government and Contractor ECP/SCN/ECN Responsibilities  
After Product Baseline**

Government Tasks	Contractor Tasks
<b>1. Review and approve</b>	<b>1. Prepare ECPs/SCNs/ECNs as</b>
ECPs/SCNs/ECNs.	required.
<b>2. Review and approve changes to:</b>	<b>2. Make changes to:</b>
<b>a. Maintenance Plans</b>	<b>a. Maintenance Plans</b>
<b>b. LSAR</b>	<b>b. LSA</b>
<b>c. Provisioning Data</b>	<b>c. Spares and Repair Parts</b>
<b>d. Technical Manuals</b>	<b>d. Technical Manuals</b>
<b>e. Personnel, Training, and</b>	<b>e. Personnel, Training, and</b>
Training Equipment	Training Equipment
<b>f. Facilities</b>	<b>f. Facilities</b>
<b>g. Support Equipment</b>	<b>g. Support Equipment</b>

## 12.9 Schedule.

**TBD**

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## **13. DEPOT REWORK AND INTERMEDIATE REPAIR**

This section summarizes planning for depot and intermediate level maintenance capability development, workload projections, and materials and data required to support rework and repair of TCS and SE.

### **13.1 Objectives.**

The purpose of this section is to plan support for the orderly development of government depot and intermediate maintenance capability for TCS and SE. Specific objectives are to:

- Develop the inter/intraservice depot decision and designate lead and secondary depots.
- Develop government organic depot and intermediate maintenance capability and capacity.
- Provide interim depot and intermediate level maintenance support until government maintenance capability and capacity have been achieved.
- Achieve government organic, intermediate, and depot level maintenance capability prior to GSD.

### **13.2 Inter/Intra-service Decision.**

The inter/intra-service depot decision will be established during Engineering and Manufacturing Development (E&MD). NAVAIR (AIR 3.1.3) will develop, plan, and staff the inter/intra-service depot decision in accordance with the milestones established in Appendix A.

### **13.3 Depot Designation.**

The depot maintenance manager for logistics (DMML) will staff the selection of the TCS and SE lead and secondary depots in accordance with NAVAIR Logistics System Process Specification for Depot Industrial Management, AL-082AA-LPS-170. AIR-3.1 is responsible for designation and management of the depots. Depot designation will be made in consonance with the schedule contained in Appendix A. A depot planning annex (DPA) will be developed by the DMML. This annex will become Appendix E to this JILSP.



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## **13.4 Support Basis.**

The labor and data provided in response to the planning requirements of this section will be based on and traceable to TCS and SE LSA and maintenance planning data. Logistic support resource requirements developed will be part of the logistic element analyses, and input to the interim support plan and individual phased support plans.

## **13.5 Depot/Intermediate Capability Development.**

### **13.5.1 CPR/R Package.**

Candidates for component pilot rework/repair (CPR/R) packages will be nominated as part of the LSA process. Upon government approval of the requirement, CPR/R packages will be developed. These CPR/R packages will be required if depot rework or intermediate repair requires specialized or new repair procedures for given TCS components and depot repairable SE items. Necessary revisions of CPR/R packages will be originated by the contractor as hardware design changes are developed.

### **13.5.2 Rework Specifications.**

The PSD/CFA will develop and provide TCS depot level rework specifications.

### **13.5.3 Facility and Site Activation.**

Facilities requirements for the designated TCS depot and all necessary intermediate level maintenance activities will be defined and developed. The contractor will prepare and provide a phased support plan for each site (see section 2). Sites will be scheduled for activation in accordance with the master site/unit activation plan.

#### **13.5.3.1 Special Facilities.**

The contractor is to describe special facilities required for the establishment of organic D level repair. Facilities such as clean rooms, provisions for radiation suppression, special storage, and security provisions are to be addressed.

## **13.6 Rework/Repair Requirements Planning.**

The master index of repairables (MIR) provides data resulting from the translation of approved TCS and SE maintenance plans and the master site/unit activation schedule (or phased support plans), into specific maintenance workload projections by site by year. Based on approved TCS and SE maintenance plans, SE allowances, and the master site/unit activation schedule, the contractor will project rework and repair requirements for a five-year period for each depot and intermediate level maintenance activity.

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## **13.7 Depot Maintenance Study.**

The systems integration contractor will perform a depot level maintenance study.

## **13.8 Depot Maintenance Inter-servicing.**

The new start source of repair process is a methodology by which depot level repairables entering the DoD inventory are considered for organic, commercial, or inter-service depot level repair support. Following ILSM approval of the TCS preliminary maintenance plan, the depot maintenance inter-service (DMI) process will be activated as described in the following paragraphs.

### **13.8.1 Part I - DMI Introduction Information Package (JLC Forms 27 and 44).**

During the E&MD phase, Part I - DMI Introduction Information Package JLC Forms 27 and 44 will be prepared for each TCS and major SE repairable WRA and SRA recommended for depot repair. The contractor will assist the government DMML in the preparation of the JLC Form 27.

### **13.8.2 New-Start Candidate Selection.**

The DMML will review and forward Part I (Depot Maintenance Inter-service) introduction information sheets to the government Maintenance Inter-servicing Management Office (MISMO) for determination of those WRA and SRA that will be designated as DMI candidates.

### **13.8.3 Part II - Technical Information Package (JLC Form 28-32) and Part III - Depot Response Package (JLC Forms 33-40 and 43).**

Following approval of Part I (DMI Introduction Package), Part II (Technical Information Package) and Part III (Depot Capability/Capacity Response Package) will be prepared for the designated DMI candidates.

- The DMML and the lead Naval Aviation Depot (NADEP) will prepare the Part II and Part III packages.
- The DMML will forward these packages to the NAVAIR Maintenance Inter-service Office (MISO) for submission to the government MISMO and the JDMAG Depot Maintenance Study Directorate (DMSD) for processing.
- All selected D-level repairable items will be subject to a DMI study no later than 90 days after E&MD contract award.

## **13.9 Depot Level Maintenance Modification Line.**

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For modifications or technical directives that require depot level maintenance incorporation, TCS and SE will be inducted in a depot modification line. The depot will schedule slots for TCS based on urgency of the change and optimization of workload scheduling. Upon ECP retrofit authorization, the government will ensure that all ECP incorporation data and kits are available and delivered to the designated depot to meet the mutually agreed to modification line schedule.

## **13.10 New Technology Impact Assessment.**

The systems integration contractor will provide an impact assessment of the application of new technology. This assessment will address new TCS and SE materials, repair techniques, tooling, and technologies not currently existing at government depot level repair facilities. The assessment should be iterative in nature to accommodate engineering changes, material changes and modifications, and new repair techniques that will occur during system development.

## **13.11 Depot/Intermediate Support.**

The contractor will provide interim depot and intermediate maintenance support as indicated in the TCS maintenance concept and section 9. Support will be provided until government organic maintenance capability (intermediate and depot) is established, prior to MSD.

## **13.12 ILS Management Requirements.**

ILS management requirements include CPR/R data packages, SE rework standards, master index of repairables, and other depot and intermediate level support data.

## **13.13 Schedule.**

**TBD**

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## **14. SITE/UNIT ACTIVATION SCHEDULES**

This section documents planning required for TCS site activation.

### **14.1 Objectives.**

The objectives of site/unit activation are to:

- Perform site activation planning.
- Develop site activation schedules.
- Activate INSURV, TECHEVAL, OPEVAL, training depot, support, and operational sites.

### **14.2 Site/Unit Activation Planning.**

Planning requirements contained herein apply to TCS and SE including test program sets (TPSs), and all planned logistic support. Sites to be activated include TECHEVAL, OPEVAL test sites, low-rate initial production, and production manufacturing sites and operational units. All site activations are to be planned by the government and the contractor during E&MD.

Site/unit activation planning includes development of a master site/unit activation schedule for TCS and SE including TPSs. The master schedule will include site/unit locations, site activation start and completion for each activation, and a site/unit readiness date. As additional sites are planned by the government, these sites will be added to the master schedule.

#### **14.2.1 Site Activation Elements.**

In order for site/unit activation to commence, the following elements must be available at each site that is scheduled to be activated, at least 60 days prior to the activation date.

##### **14.2.1.1 Facilities.**

Modifications to or construction of facilities, including ship alterations if required, must be completed. (See section 8.)

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## **14.2.1.2 Support Equipment.**

TCS SE including TPSs and special hand tools must be delivered to each site. (See section 6.) Calibration standards and procedures must be available at the calibration sites.

## **14.2.1.3 Training.**

Training requirements must be established and trained personnel made available at each site. (See section 4.) Training equipment/ trainers, and plans, aids, guides, and trained instructors are required at each training site.

## **14.2.1.4 Technical Data.**

Technical manuals (both operator and maintenance), wiring diagrams, calibration procedures, diagnostic aids, maintenance requirements cards, and related materials must be made available at TCS sites. (See section 5.) For depot sites, TCS and SE component pilot rework/repair packages and rework specifications and standards must be available. (See section 13.)

## **14.2.1.5 Supply Support.**

Supply support including spares and repair parts must be available at each site. (See sections 7 and 9.)

## **14.2.1.6 Interim Support.**

If required, interim (contractor) support including personnel, must be available for site/unit activation and operations during the interim TCS support period. (See sections 9 and 10.)

## **14.2.2 Master Site/Unit Activation Schedule.**

Given government input data, the contractor will prepare a master site/unit activation schedule to include all planned TCS sites. The master site/unit activation schedule will constitute the primary milestones for the development and delivery of TCS support equipment, and all other logistic support. This schedule will be based on the time-phased transition of maintenance capability from the contractor to the government.

### **14.2.2.1 Schedule Revisions.**

The contractor and the government will periodically review the development status of each TCS component, equipment, and support equipment item. This review will determine the assignment and target dates for contractor, contractor-government, and government organic support responsibilities. Using these inputs, the government and systems integration contractor will revise the master site/unit activation schedule.

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## **14.2.3 Support Element Schedules.**

For each site, an individual site /unit activation schedule that details support planning for the elements presented in 14.2.1, above, will be prepared.

## **14.2.4 Site Activation Data.**

Site activation data and data packages will be provided as necessary to activate particular sites. Site activation data are to include TCS SE installation, checkout, and verification schedules.

### **14.2.4.1 Support Site Activation Plan.**

A phased support site activation plan for each site requiring activation will be developed. The support site activation plan will be issued approximately 36 months prior to the time the given site is to be activated. It will identify major tasks, significant milestones, and functional details. Each of the schedules required by 14.2.2 and 14.2.3 will become part of the support site activation plan.

### **14.2.4.2 Support Site Activation Data.**

The contractor will provide support site activation data for particular sites requiring activation.

## **14.3 Site Activation Planning Conferences.**

At each site the following conferences will be conducted.

### **14.3.1 Initial Site Activation Planning Conference**

The initial site activation planning conference will be conducted within one month after the site activation plan has been issued for a specific site. The contractor will be represented as will be the government. Operational personnel will be present. These personnel will review the site activation plan and status. The purpose of this meeting will be to establish lines of communications and to:

- Acquaint cognizant personnel with schedules, critical milestones, and responsibilities.
- Verify or re-establish the delivery dates for equipment, installation time frames, and verification schedules.
- Specify operational activities responsibilities.
- Highlight potential problems and determine recommended courses of action.

The chairman of this meeting will issue meeting minutes to all participating activities.

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## **14.3.2 Intermediate Site Planning.**

An intermediate site evaluation conference will be conducted approximately three months prior to site activation of each site. This conference will be attended by contractor, vendors as required, and operational personnel. The intermediate evaluation is intended to provide the attendees with actual on-site status, and the knowledge required to resolve potential problem areas that may arise during the activation.

## **14.3.3 Final Site Planning Conference.**

A final site evaluation will be performed following TCS and SE installation, checkout, and verification at a specific site.

## **14.4 ILS Management Requirements.**

ILS management requirements include the master site/unit activation schedule, support element schedules for each site, and site activation data for each site.

## **14.5 Schedule.**

**TBD**

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## 15. CONTRACTOR DATA COLLECTION

This section establishes the plans for TCS and SE contractor data collection, storage, and use.

### 15.1 Objectives.

The objectives of contractor data collection are to:

- Collect TCS and SE maintenance event and failure data during phases I through IV of supportability T&E, and during other prototype and pre-production testing. (See section 10.)
- Permit storage, retrieval, and analysis of collected data, and comparison of data with emerging LSAR and maintenance plan data.
- Provide data necessary for analysis that determines whether specified ILS performance requirements have been met. (See section 1.)
- Permit documentation of logistic support resources used and deficiencies discovered during supportability T&E.
- Supplement data obtained from other TCS T&E, R&M demonstrations, TECHEVAL, OPEVAL, and other tests and evaluations.

### 15.2. Data Inputs.

The contractor will collect data during design and verification testing, GFE/CFE item acceptance tests, supportability T&E, Phases I through IV, and R&M demonstrations. Data will be collected for TCS, SE (whether CFE, vendor items, or GFE), and training equipment.

#### 15.2.1 Data Collection Plan.

Presented below are planning data related to data collection.

*Failure and maintenance data generated during R&M tests and demonstrations will be documented and translated by the contractor using a system that is compatible with the Navy's maintenance data collection system (see OPNAVINST 4790.2F). Details of the data collection system will be as indicated in section 15.*

*Types of data to be collected during Phase II are necessary to document and translate R&M demonstration and supportability assessment results, and to verify LSAR and maintenance plan data. Data to be collected, translated, or derived include, but are not limited to failure data and maintenance/logistic data, as indicated in section 10.*



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## **15.2.2 Maintenance Data Base Compatibility.**

*Data will be collected in a manner compatible with the Army, Air Force and Navy maintenance data collection systems and the contractor's LSA processes and records.*

*The contractor will develop operator and maintenance manpower and skill level estimates for the TCS, and SE using specified methodology. These estimates are to include scheduled and unscheduled maintenance man-hours per operating hour at organizational and intermediate maintenance levels, by work center, MOS/NEC, rank/ratings, and totals. The bases for these estimates are to be LSA, LSAR data, reliability and maintainability analysis, historical data for the TCS and modeling.*

*Data from related programs such as reliability and maintainability (R&M), human engineering, and system safety are to be used by the contractor as inputs to the logistic support analysis process. The LSA interfaces of these programs are described below.*

## **15.2.3 LCN Identifiers.**

LSA control numbers (LCNs) developed in accordance with section 3 will be used to identify items that fail or require maintenance.

## **15.2.4 Processing.**

The contractor will be responsible for source data recording, subsequent updating, maintaining an audit trail, storing, and sorting the maintenance, failure, and logistic data.

## **15.2.5 Government Queries.**

Data will be collected and disseminated by the contractor as part of the CITIS or upon request. The contractor will accept government queries for information from the compiled data base.

*CITIS is a computer-based service that draws upon integrated technical information from throughout a contractor's enterprise to support the product development process. Instead of program and product documentation (typically paper deliverables) being prepared and sent, program and product information may be viewed and manipulated at workstations across a network that includes most Government data users.*

- *CITIS provides a single entry point for authorized government access to contractor-maintained weapon system technical data.*
- *CITIS should provide remote access data services to the Acquisition Manager and Government technical, business and logistic activities responsible for review and approval of data. CITIS services should also provide access to and management of technical information.*
- *CITIS may include communication via electronic mail. To the maximum extent possible CITIS will be utilized with the TCS program.*

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## **15.2.6 Documentation.**

Documentation will be provided that includes file structure descriptions in a data code manual, and necessary information that will permit government analysts to query the files.

## **15.3 Design and Processing Criteria.**

### **15.3.1 File Description.**

The contractor will provide the file containing the elements of data described herein and in section 10, and update the file on a continual basis. The specific computer implementation used to establish the data base will be as determined by the contractor.

### **15.3.2 Remote Terminal Access.**

Data collection implementation will provide for remote terminal access by government personnel.

### **15.3.3 Extract Programs.**

The necessary, flexible extract programs will be developed that will be used by the contractor and the government during Phases II, III, and IV of supportability T&E. (See section 10.) Extract programs required by the government will be limited to the objectives indicated in section 15.1. Extract program descriptions and procedures will be included in documentation required by 15.2.6.

### **15.3.4 Event Flow Diagram.**

An engineering and event flow diagram will be developed that identifies acceptance tests, design reviews, mock-up reviews, and development and production functions and tests that generate maintenance actions.

### **15.3.5 Output Records.**

As a minimum, output records will contain the following information:

- Type of Test.
- LCN, component identification, and nomenclature.
- Manufacturer and serial number of the event generating item.
- When discovered (code), malfunction description (code), and operating time between events.

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- Preventive, corrective, servicing, and calibration or alignment task number as listed in the maintenance plan. Action taken (code) and the “why” aspects. Start work and complete work dates and times.
- Time distributions between events as represented by selected action taken (codes).
- Elapsed time to repair, total man-hours, and man-hour distributions.
- Frequency of occurrence (operating hours, cycles, calendar time).
- Logistic resource utilization data including identification of skill levels, support equipment, spares and repair parts, and facilities.
- Equipment configuration.

Output reports will also include performance indices such as maintenance man-hours/operating hour (MMH/OH), MTBF, mean operating hours between maintenance actions (MOHBMA), and MTTR. It should be noted that these are laboratory (inherent) data, not field (operational) data.

## **15.3.6 Sorting.**

Design of the data system is to permit queries and sorting on the following fields: Component or equipment, LCN, manufacturer's code, event, and action taken. Additional sort features will include top ten categories of items for frequency of actions, elapsed time, and material and man-hour consumers.

## **15.4 LSA Interfacing.**

Data collection is to be performed with the express purposes of: 1) ILS performance specification achievement testing; and 2) comparison of actual test data with emerging LSAR and maintenance plan data. These data are to be updated as indicated in section 3.

## **15.5 Data File Transfer to PSD/CFA.**

Data files will be transferred to the government PSD/CFA after completion of Phase IV of the supportability T&E.

## **15.6 ILS Management Requirements.**

ILS management requirements include contractor data file documentation, event flow diagram, data resulting from testing and government queries, and output reports as required.

## **15.7 Schedule.**

**TBD**

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## **16. COMPUTER RESOURCES SUPPORT**

This section details planning for and configuration management of TCS and SE/trainer computer resources support during the software life cycle.

### **16.1 Objectives.**

Objectives of computer resources support planning are to:

- Develop computer resources support on the basis of logistic support analysis.
- Ensure that computer resources configuration baselines are established.
- Ensure that computer resources configuration audits are performed in a timely manner, that traceability to firmware and hardware configuration is demonstrated, and that configuration control is established.
- Ensure that effective configuration management of computer resources is established by the contractor.
- Ensure that object and source code for product baselines are transitioned with all government rights.
- Ensure that complete computer resources documentation is developed to the product baseline and is made available to the PSDs/CFAs and depots as required.
- Transition computer resources product baselines, configuration management, and software upkeep responsibility to the government.
- Provide timely computer resources support to operational activities during the interim support period.

### **16.2 Computer Resources Life-Cycle Management Plan (CRLCMP).**

The computer resources life-cycle management plan (CRLCMP) describes the basis for life-cycle management of software and its relationship to TCS. It defines organizations, management procedures, responsibilities, requirements, and controls for TCS software development, from contractor development and support to government organic support. The CRLCMP provides the plan for the development and support of mission critical computer resources (MCCR). The CRLCMP is prepared by the contractor and the government (AIR-4.5).

### **16.3 Computer Resources Configuration Management Plan Summary.**

A computer resources configuration management plan will be prepared as part of the CRLCMP.

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## **16.3.1 Management of Plan Details.**

A separate section of the computer resources configuration management plan will be provided that is entitled Logistic Support Documentation Configuration Management. This section of the plan will address contractor procedures and controls for pre- and post-product baseline computer resources management and control, status accounting of computer resources support items developed in response to LSA, and computer resources-related logistic element documentation. All configuration control requirements listed in subsequent paragraphs herein will be addressed.

## **16.3.2 Configuration Management Plan Execution.**

After the computer resources configuration management plan is approved by the government, the systems integration contractor will implement computer resources configuration management, control, and status accounting of support items for TCS computer resources training equipment computer resources, SE computer resources, and computer resources logistic element documentation, in accordance with the approved plan.

## **16.4 Support Tasks.**

Computer resources support assistance will be provided during the support life-cycle as outlined below.

### **16.4.1 Computer Resources Logistic Support.**

Requirements for computer resources logistic support will be developed through the LSA process. Technical documentation for TCS and SE software is to be included in technical manuals, and for SE/trainers on program disks as required by the design. Training curricula, guides, and courses required are to include TCS and SE computer resources description, operation, and use.

- Computer resources logistic support requirements are to be developed, analyzed, and included in facilities development, interim support, supportability T&E, PHST, configuration control and management, and depot rework and intermediate repair capability development.
- Computer resources maintenance documentation, training, and all other required logistic support are to be provided in consonance with the master site/unit activation schedule.

### **16.4.2 Support for PSDs/CFAs.**

Support for the PSDs/CFAs will be provided as follows. Included are TCS and SE computer resources support. (See also section 1.12.)

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- The PSD/CFA for TCS is **TBD**
- The intended TCS SSA is **TBD**
- The CFA for consolidated automated support system (CASS) is **TBD**

## **16.4.3 Interim Support Phase.**

The contractor will assist in the transfer of computer resources support and configuration management capability to the PSDs/CFAs through a pre-defined phased-in approach.

- Transition to government organic support is to be completed prior to the software support date (SSD).
- The contractor will provide computer resources support and configuration management assistance to operational activities, and the PSDs/CFAs, during transition prior to GSD, as required.

## **16.4.4 Depot Support.**

During the interim support period, the contractor will provide, as needed, computer resource-related assistance to the lead and secondary depots for planning and conduct of TCS and SE pilot reworks, and in establishment of production capability. Assistance will include delivery of computer resources logistic support, software configuration data, and necessary training.

## **16.5 Computer Resources Configuration Management.**

Computer resources configuration management and control functions for TCS simulation and training aid systems, and automatic test equipment will be performed by the contractor and the government. (See also section 12.)

### **16.5.1 Configuration Audits.**

Physical and functional configuration audits of each TCS and SE computer resources configuration item (CI), including internal baselines and documentation, will be performed by the contractor in conjunction with hardware configuration audits, and be witnessed by the government.

### **16.5.2 Configuration Control.**

Prior to the product baseline, configuration control of each TCS and SE computer resources CI will be performed by the contractor in conjunction with hardware configuration control.

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## **16.5.3 Software Changes.**

Prior to the product baseline, the systems integration contractor will develop and manage software changes, and the logistic support thereof. After establishment of the product baseline and implementation of government configuration control, the contractor will develop software changes and logistic support, therefore, through the engineering change process (ECP). ECPs will include software changes and logistic support impact. (See section 12.)

## **16.5.4 Configuration Status Accounting.**

Prior to the product baseline, the systems integration contractor will organize and implement a software configuration control board (SCCB). This board will analyze and evaluate operational impacts, technical design impacts, and logistic resource requirements concerning software changes.

- This board will implement procedures that reconcile the configuration status accounting reports and the status of the software with the approved baseline and its approved changes.
- After government configuration control is established, the contractor will assist the PSDs/CFAs in the transfer of software configuration status accounting data from the contractor to the government's configuration status accounting system.

## **16.6 Allowances.**

Allowances for TCS SE software for field intermediate maintenance activities (IMAs) will be included in NAVAIR 00-35QV-1/2 and tailored outfitting lists (TOL), in accordance with NAVAIRINST 13630.1A.

## **16.7 Contractor Organization.**

**TBD**

## **16.8 ILS Management Requirement.**

ILS management requirements include computer resources logistic support, software engineering changes including technical directives, and configuration status accounting data.

## **16.9 Schedule.**

**TBD**

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## **17. STANDARDIZATION, INTERCHANGEABILITY, AND INTEROPERABILITY**

This section presents planning for TCS and SE hardware and software standardization, interchangeability, and interoperability (SI&I).

### **17.1 Objectives.**

Objectives of SI&I planning are to:

- Identify and document SI&I management requirements and technical constraints.
- Implement technical standardization, interchangeability, and interoperability constraints.
- Document SI&I deficiencies during design reviews, physical configuration audit, and test and evaluation.
- Correct SI&I deficiencies.
- Continue meeting SI&I requirements during production, in order to reduce the logistic burden.

### **17.2 Design Planning Information.**

#### **17.2.1 Standardization Program Plan.**

A standardization program plan will be developed and provided. TCS and SE logistic support and related cost considerations will be included in all portions of standardization program planning. A parts control program will be part of the standardization program. ILSM Note: AIR-4.0 Divisions establish requirements for standardization program plans and parts control programs.

### **17.3 SI&I Support Efforts.**

#### **17.3.1 SI&I Planning.**

In the standardization program plan and in the maintainability demonstration plan, SI&I sections will be included that address the requirements that follow.

#### **17.3.2 Inputs to Design.**

During initial TCS design efforts and in conjunction with logistic support analysis, the contractor will identify and document recommended hardware and software SI&I



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design constraints that have utility due to cost, readiness, availability, or supportability considerations. These constraints will be included in design guidance documentation and subsequent SI&I design efforts. As the design progresses, this task is to be performed to and including the piece-part level of indenture. SI&I design constraint documentation will be made available for government review.

## **17.3.3 Design Reviews.**

During design reviews, the systems integration contractor will address TCS and SE SI&I design, and provide documentation for implementation of SI&I design constraints and requirements. All resulting SI&I design changes will be documented and be made available for periodic government review.

## **17.3.4 Physical Configuration Audit (PCA).**

During PCA, the contractor will assist the government in examination of drawings in conjunction with TCS and SE hardware and software, to verify whether SI&I design requirements are reflected in drawings, hardware, and software. Deficiencies will be documented and made available for government review.

## **17.3.5 Test and Evaluation.**

During maintainability demonstrations, the contractor will demonstrate TCS and SE SI&I as specified in the government-approved standardization program plan. Results will be documented and made available as indicated below.

## **17.3.6 Pre-production/Production.**

During pre-production manufacturing activities, including process and fabrication specifications development, the contractor will examine TCS and SE process and fabrication specifications, drawings, and parts lists to ensure that SI&I constraints and requirements continue to be met. The results of these examinations will be documented and made available for periodic government review. During production, SI&I will be maintained through the engineering change and configuration control process.

## **17.4 SI&I Documentation.**

SI&I deficiency documentation will be provided as follows. Deficiencies noted during design reviews and the PCA will be documented on design review deficiency reports. Status reports for unresolved SI&I deficiencies will be provided to the government as part of design review status reports. SI&I deficiencies discovered during supportability T&E (Phases II, III, and IV) will be documented by the contractor and provided to the government. (See section 10.) Status Reports will be provided.

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## **17.5 ILS Management Requirements.**

SI&I ILS management requirements include SI&I portions of the standardization program plan and maintainability demonstration plan, and deficiency status reports.

## **17.6 Schedule.**

**TBD**

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## **18. LOGISTIC LIFE-CYCLE COST**

This section summarizes planning for TCS and SE logistic life-cycle cost (LCC) projections and reporting.

### **18.1 Objectives.**

Objectives of this section are to support program planning and budgeting system (PPBS) estimates, supportability trade studies, and ECP cost analysis in accordance with the *Joint Design to Cost Guide—Life Cycle Cost as a Design Parameter*, (DARCOM P700-6, NAVMAT P5242, AFLC/AFSCP 800-19).

### **18.2 Application.**

Logistic life-cycle costs include TCS and SE logistic support analysis; logistic element planning, analysis, development, and acquisition; supportability T&E; and operating and support (O&S) costs. Logistics elements include maintenance planning/LSA, support equipment and its support, training equipment/trainers and related support., training, manpower and personnel, supply support, facilities, computer resources support, design interface, PHST, and technical data.

#### **18.2.1 Basis.**

Logistic LCC data are to be based on and traceable to LSA data, the TCS program schedule, and defined PPBS and contract/project work breakdown structure (C/PWBS) elements.

### **18.3 Logistic LCC Baseline.**

Life-cycle cost developmental work will be performed as follows.

#### **18.3.1 LCC Model and Baseline Development.**

The systems integration contractor will acquire, develop, and maintain an LCC model *in accordance with the Joint Design to Cost Guide—Life Cycle Cost as a Design Parameter DARCOM P700-6, NAVMAT P5242, AFLC/AFSCP800-19.*

The LCC model may be the NAVMAT Life-Cycle Cost (FLEX) model, or a contractor-selected, equivalent model. If contractor-selected (other than FLEX model), the contractor is to provide to the government complete documentation of the model, including changes and modifications as these occur.

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- The model will be exercised not later than six months after development begins, in the presence of government representatives. Following model exercise, formal government review and approval of initial LCC data entry leading to the logistic LCC baseline will occur.
- The logistic LCC baseline will be developed and delivered not later than nine months after development begins.
- After the logistic LCC baseline is developed, formal government review and approval of the baseline is required. After approval, the baseline will be updated as input data are refined.

## **18.3.2 Logistic LCC Data Base.**

The contractor will develop and maintain an LCC data base containing cost data and cost drivers related to design, performance, schedule, and program parameters.

## **18.3.3 Logistic LCC Tracking.**

A logistic LCC tracking system will be established as necessary to accumulate and track all available LCC data. This system will be used to compare actual or projected cost values with baseline parameters, account for early engineering or other estimates, and validate new LCC model data entries. This LCC tracking system will be used to:

- a. Provide a continuous record and history of logistic LCC estimates and projections, and
- b. Alert management when significant logistic LCC increases are apparent.

## **18.4 Cost Driver Estimates.**

Cost estimates, and the predicted range of costs, will be provided for all major cost drivers (including LSA candidates that are projected to be cost drivers). Logistic cost driver summaries will be provided as part of the LCC report.

## **18.5 LCC Documentation.**

All documentation that is provided in support of the baseline estimate and LCC reports will be sufficiently detailed to permit the government to replicate contractor LCC projections. Documentation will include all assumptions, type of analysis performed, equations used, sample calculations, and the results.

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## **18.6 Logistic LCC Report.**

The contractor will report on a recurring basis revisions to the logistic LCC baseline estimate. Cumulative ECP and support change costs will be included. The logistic LCC report will include data required by sections 18.3.4.a and 18.4.

## **18.7 Subcontractors.**

Logistic LCC will be used as a consideration in selection of subcontractors and vendors, and LCC requirements will be specified in subcontracts as appropriate.

## **18.8 Logistic LCC Targets.**

TCS and SE logistic LCC targets and thresholds will be established. Targets for cost drivers and cost related input parameters will be established. Logistic cost targets for use in designing the support system will be established. Cost target data will be made available to the government.

## **18.9 ILS Management Requirements.**

ILS management requirements include the logistic LCC baseline and baseline estimate, logistic cost driver summaries, and logistic LCC reports.

## **18.10 Schedule.**

**TBD**

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## **APPENDIX A ILS Program Milestones**

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## **APPENDIX B** **LSA Plan**

# **DRAFT**

## **APPENDIX C** **Interim Support Plan**



# **DRAFT**

## **APPENDIX D** **Supportability Assessment Plan**

# **DRAFT**

## **APPENDIX E** **Depot Planning Annex (DPA)**

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## **APPENDIX F** **Design for Maintainer**

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## APPENDIX G

### GLOSSARY

A <sub>o</sub>	Operational Availability
ACAT	Acquisition Category
ADP	Automated Data Processing
AFRP	Approval for Full Rate Production
APML	Assistant Program Manager for Logistics
APMTS	Assistant Program Manager for Training Systems
ASO	Aviation Supply Office
CAD	Computer Aided Design
CAE	Computer Aided Engineering
JCALs	Continuous Acquisition and Life-Cycle Support
CAM	Computer Aided Manufacturing
CASS	Consolidated Automated Support System
CCB	Change Control Board
CDRL	Contract Data Requirements List
CETS	Contractor Engineering and Technical Services
CFA	Cognizant Field Activity
CFE	Contractor Furnished Equipment
CI	Configuration Item
CITIS	Contractor Integrated Technical Information Services
CNO	Chief of Naval Operations
COEA	Cost and Operational Effectiveness Analysis
CONUS	Continental United States
CPM	Critical Path Method
C/PWBS	Contract/Project Work Breakdown Structure
CPR/R	Component Pilot Rework/Repair
CRLCMP	Computer Resources Life-Cycle Management Plan
CSEL	Consolidated Support Equipment List
D Level	Depot
DCN	Design Change Notice
DII-COE	Defense Information Infrastructure/Common Operating Environment
DMI	Depot Maintenance Interservice
DMML	Depot Maintenance Manager for Logistics
DoD	Department of Defense

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DoDI	Department of Defense Instruction
DPA	Depot Planning Annex
DT	Developmental Testing
ECP	Engineering Change Proposal
ECN	Engineering Change Notice
E&MD	Engineering and Manufacturing Development
EM	Electromagnetic
ESD	Electrostatic Discharge
ETS	Engineering and Technical Services
FCA	Functional Configuration Audit
FRD	Facilities Requirements Document
GCS	Ground Control Station
GFE	Government Furnished Equipment
GSD	Government Support Date
HAE	High Altitude Endurance
HARDMAN	Military Manpower and Hardware Integration
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HQ	Headquarters
I Level	Intermediate
ICSS	Interim Contractor Supply Support
IETM	Interactive Electronic Technical Manual
ILSDS	Integrated Logistic Support Detail Specification
ILSM	Integrated Logistic Support Manager
ILSMT	Integrated Logistic Support Management Team
ILSP	Integrated Logistics Support Plan
IMA	Intermediate Maintenance Activity
IMRL	Individual Material Readiness List
INSURV	Board of Inspection and Survey
IOC	Initial Operational Capability
IOT & E	Initial Operational Test and Evaluation
IPT	Integrated Product Team
ISD	Instructional Systems Development
ISIL	Interim Support Items List
ISP	Integrated Support Plan
JTC	Joint Training Center
JROC	Joint Requirements Oversight Committee
JROCM	Joint Requirements Oversight Committee Memorandum
JTSP	Joint Training Systems Plan
LCC	Life-Cycle Cost

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LCN	LSA Control Number
LEM	Logistic Element Manager
LM	Logistic Manager
LORA	Level of Repair Analysis
LRG	Logistic Review Group
LRFS	Logistic Requirements Funding Summary
LRIP	Limited Rate Initial Production
LSA	Logistic Support Analysis
LSAR	Logistic Support Analysis Record
MAE	Medium Altitude Endurance (Predator)
MAM	Maintenance Assistance Modules
MCCR	Mission Critical Computer Resources
MDA	Milestone Decision Authority
MICOM	Military Intelligence Command
MIR	Master Index of Repairables
MISO	Maintenance Interservice Office
MISMO	Maintenance Interservicing Management Office
MRC	Maintenance Requirement Card
MMH	Maintenance Man-Hours
MNS	Mission Needs Statement
MOHBMA	Mean Operating Hours Between Maintenance Actions
MOS	Military Occupational Specialty
MP	Maintenance Plan
MPTCD	HARDMAN Manpower, Personnel, and Training Concept Document
MPTRRD	HARDMAN Manpower, Personnel, and Training Resource Requirements Document
MSD	Material Support Date
MTBF	Mean Time Between Failures
MTBMCF	Mean Time Between Mission Critical Failures
MTTR	Mean Time to Repair
NAESU	Naval Aviation Engineering Support Unit
NATSF	Naval Aviation Technical Support Facility
NAVAIR	Naval Air Systems Command
NAVICP	Naval Inventory Control Point
NAVSEA	Naval Sea Systems Command
NEC	Navy Enlisted Classification Code
NSN	National Stock Number
NSWC-DD	Naval Surface Weapons Center, Dahlgren Division

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O Level	Organizational
O&M	Operations and Maintenance
O&S	Operating and Support
OH	Operating Hours
OPEVAL	Operational Evaluation
ORD	Operational Requirements Document
OTS	Off the Shelf
P & D	Production and Deployment
PCA	Physical Configuration Audit
PCO	Procuring Contract Officer
PEO(CU)	Program Executive Office for Cruise Missiles and Unmanned Aerial Vehicles
PHST	Packaging, Handling, Storage, and Transportation
PM	Program Manager
PMA	Aviation Program Manager
PMTCS	Program Manager for Tactical Control System
POA&M	Plan of Attack and Milestones
PPBS	Program Planning and Budgeting System
PPP&M	Preservation, Packaging, Packing, and Marking
PRS	Provisioning Requirements Statement
PSD	Product Support Directorate
PSICP	Primary Support Inventory Control Point
PSP	Phased Support Plan
QA	Quality Assurance
R & M	Reliability and Maintainability
RAM	Reliability, Availability, and Maintainability
RCM	Reliability Centered Maintenance
RFI	Ready for Issue
RFP	Request for Proposal
RIP	Readiness Improvement Program
ROR	Repair of Repairables
SAIP	Spares Acquisition Integrated with Production
SCCB	Software Configuration Control Board
SCN	Specification Change Notice
SE	Support Equipment
SERD	Support Equipment Recommendation Data
SERMIS	Support Equipment Resources Management Information System
SECL	Support Equipment Candidate List

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SI&I	Standardization, Interchangeability, and Interoperability
SIL	Systems Integration Laboratory
SM&R	Source, Maintenance, and Recoverability
SML	Support Material List
SM&R	Source, Maintenance and Recoverability
SRA	Shop Replaceable Assembly
SSA	Software Support Activity
SSD	Software Support Date
SSMP	Supply Support Management Plan
T&E	Test and Evaluation
TAMMS	The Army Maintenance Management System
TCS	Tactical Control System
TD	Technical Directive
TDMO	Technical Data Management Officer
TDMP	Technical Data Management Plan
TECHEVAL	Technical Evaluation
TEMP	Test and Evaluation Master Plan
TM	Technical Manual
TMCR	Technical Manual Contractual Requirement
TMMT	Technical Manual Management Team
TOL	Tailored Outfitting List
TPDR	Technical Publication Deficiency Report
TPS	Test Program Set
TUAV	Tactical UAV (Outrider)
TYCOM	Type Commander
UAV	Unmanned Aerial Vehicle
UUT	Unit Under Test
WBS	Work Breakdown Schedule
WRA	Weapons Replaceable Assembly
WSPD	Weapons Systems Planning Document



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**for the**

**Tactical Control System (TCS)**

**XXXXXXX**

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